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Paleontology, general

~~QE 71~~
~~S 82~~

Steinhaur,
on
Fossils

Independent Coal formation.

Extraneous fossils from the Yorkshire & Derbyshire coal field. See Farey's Derbyshire & Williams's Mineral Kingdom.

1. Phytolithes verrucosus Martin Petrif. Derb. a trunk 2 f. 2 in long. flattened on one side, the pith distinct at one ~~end~~ end. For the various and discrepant opinions of authors on this paradoxical vegitable fossil, see Woodward's Catal. Martin, Parkinson Org. Rem. Vol. I. What Martin describes & figures as ~~cylinders~~ leaves are cylindrical fibres accidentally flattened in his specimen which I examined myself. This fossil also occurs in the Derbyshire basalt (a specimen in White Watsons Collection) & in chert in the upper bed of the M. Limestone at St. Vincents Rock, behind the Hotwells parade; it abounds in nearly all the beds of the Yorkshire, Northumberland, S. Wales & Somersetshire Coal formation.

2. Ph. verrucosus a termination in silecious grit from Stanningley near the Canal. Yorkshire.

3. Ph. verrucosus, part of a trunk with internal pith and cylindrical bodies resembling fibres. Soft argillaceous sandstone. Fulneck.

4. Ph. verrucosus, a fragment of a trunk split longitudinally, exhibiting the cancellated surface of the pith & fibres from the pith. Hard silecious stone. (Calliard) Bradford.

5. Ph. verrucosus resembling the former Bradford

6. Ph. verrucosus, the lateral fibres; impression of part of the trunk & fibres proceeding from the pustules. Calliard. Bradford

17. Ph. verruciosus. casts of the lateral fibres in Calliard Culverly. Bradford

8. Phytolithus sulcatus Martin. nearly 6 in broad, impression of one side of 6 joints of the trunk; shews traces of the whorls of fibres at the joints. Ironstone Shelf near Bradford

9. Ph. sulcatus 6 joints of the trunk flattened. Ironstone Low moor. Yorks.

10. Ph. sulcatus 3 joints much flattened; very broad striae. Ironstone Low moor.

11. Ph. sulcatus, part of three joints, the intermediate one very short. Ironstone. Low moor

12.* Ph. sulcatus, two joints with the matrix striae very fine (Ph. striatus Martin.) Iron st. L. moor.

12. Ph. sulcatus part of two joints the striae channelled Iron st. L moor.

13. Ph. sulcatus. Single joints almost cylindrical Iron st. Attercliffe Sheffield.

14. Ph. sulcatus. A single joint nearly cylindrical Iron st. L. moor.

15. Ph. sulcatus. A single joint cylindrical in sandstone, the vegetable matter in the form of coal on the surface. Pudsy delves. Works.

16. Ph. sulcatus, 2 joints a coarse almost obliterated specimen in siliceous gritty sandstone, one of the lowest beds of the coal formation. Stanningley.

17. Ph. sulcatus. 2 joints in argillaceous sandstone the second contracted. Pudsy delves.

18. Ph. sulcatus. A Termination 10 joints marks of the fibres very distinct, striae broad. Irons. Shelf

19. Ph. sulcatus. A Termination, 17 joints, much flattened & bent. Lowt. Shelf.

†20. Ph. sulcatus. A Termination, 5 joints, thin finely striated in argillaceous Sandstone. Dudley delves

†21. Ph. sulcatus. A termination 6 joints

21* The matrix of the last is in which stems of the whorls of fibres are very distinct. Arg. sands. Dudley.

†22. Ph. sulcatus. Termination 7 joints much shortened by perpendicular pressure. A.S. Dudley

†23. Ph. sulcatus, part of 2 joints which exhibit traces of two branches going off at the joint. (unique.) Iron. Shelf.

24. Ph. sulcatus? The striae obliterated, the whole included in a coaly matter, the relique of the former vegetable. Arg sandstone with Iron. Dudley

25. Specimen of the coaly matter investing specimens of this and the allied species.

†26. Phytolithus parmatus nobis. A large scutum with part of the cancellated bark. Iron. Shelf.

Note this paradoxical vegetable fossil has as far as I know escaped the notice of all writers on the subject.

27. Ph. parmatus. A scutum less distinct. Shelf.

28. Ph. parmatus, part of the cancellated bark. Low moor.

29. Ph. parmatus. 2 scuta, the bark smooth - perhaps an impression of the ligneous part. Shelf

29* Ph. parmatus; part of the trunk with 3 deep impressions resembling scuta on each side

Low moor

29** Ph. parvnatus, appaiently the whorl of fibres proceeding from one of the Scuta. Shale. Lowmoor.*

30. Phytolithus cancellatus. Martin. Part of the trunk, vegetable matter bituminized. Irons. Attercliffe Sheffield

31. Ph. cancellatus. resembling the preceding leaves.

32. Ph. cancellatus. like 31 but with traces of the pith. Attercliffe Sheffield

32* Do. do. cylindrical, longitudinally perforated Attercliffe Sheffield.

33. Do. do. part of a cylindrical trunk. Pyritical Irons. Lowmoor.

34. Ph. cancellatus. branching, in arg. sandst Stanningly.

35. Ph. cancellatus, impression of the epidermal surface & cast of the cortical. Arg. sandst. Sheffield

36. Ph. cancellatus Cast of the ligneous part with the cavity left by the removal of the pith. Lowm.

37. Ph. cancellatus. flattened epidermal impression Relf.

38. Ph. cancellatus. Do Mirfield

39. Ph. cancellatus. Do covered with Coal. Do.

40. Ph. cancellatus. Do the coal exhibiting traces of the fibrous texture of the bark. Do.

41. Ph. cancellatus Do. on Shale. Gomersal.

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* The above specimens exhibit all that I have been able to collect of this fossil

42. Ph. cancellatus epidermal cast. Norfolk.
43. Ph. cancellatus Gris by 10. ir on shale burnt to prevent its decomposition. Shelf
44. Ph. cancellatus? The Hollow left by the removal of a branching vegetable trunk resembling Ph. cancellatus but specifically distinct. Shelf
45. Ph. tesselatus nobis. rare. Shelf.
46. Traces of Ph. cancellatus on coal. Tong.
47. Ph. cancellatus, a small branched specimen in pyritical ironstone. Sheffield
48. Ph. cancellatus. trunk with a slender branch arg. sandstone. Dudley.
49. Ph. cancellatus branching, much flattened. D°
50. Ph. cancellatus, the markings contracting at the end like Ph. parmatus. arg. sa. Dudley.
51.–52. Varieties of Ph. cancellatus. D.s Dudley
53.–61. Phytolithus spinosus nobis – This fossil resembles Ph. cancellatus in the scaly markings of the surface but differs in being studded with longitudinal rows of tubercles. Marg. Sa. Dudley
62. Ph. spinosus in Pyrites with investing coaly matter; one end terminates in a blunt point. Lnoor.
63. A Fruit? or part of a branch of Ph. spinosus?
64. A similar specimen more probably Ph. spinosus.
65. Phytolithus annulatus nobis. arg. S. Dudley
66. Ph. annulatus. arg. S. Bilcly.

67

68 Vegetable remains longitudinally striated irregularly - sometimes very large. Pudry

69. Do.

70. Broad parallel bands marked with alternating cicatrices. rare in the Yorkshire coalfield. in Shale. Lowmoor.

71. Filicites. Pseudoregalis Martin. Ironst. Shelf

2 - 4 Do. do: Lowmoor

5 . 6 Filicites striatus Martin. Shelf

7 F. pseudoregalis minor nobis. Shelf

8 - 12 F. acaciaefolius nobis. Shelf

13 F. pseudoregalis minor. Lowmoor.

14 . F. crispus. nobis. Shelf

15 . F. auriformis. Martin. Shelf

16 F. pseudoregalis a single leaflet on grit. Song.

17. Stemopa Filicite. Ironst. Shelf.

18 - 24 Small specimens of Filicites in Ironst. Shelf

25. Filicites Equiseti on Shale. Lodge and bridge

26 . Filicites ?

27 Filicites Lycopodii ? on Shale do:

28. Filicites Adianthi on Shale do:

29. Filicites on Shale Somerset Shire Coalfield.

(30) – (35) Cones in Ironstone & pyrites. See Parkinson Org. Rem. Vol. I Lowmoor

(36.) Spike of some Graminea? Shelf

(37) Fontinalis? – Irons. Lowmoor.

(38) Chara? – Ironst. Shelf

(39). Hippuris? Ironst. Shelf.

(40). Do do. Lowmoor.

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[79] – [78] Different species of freshwater mytilidae from Shelf, Lowmoor Sheffield (abt. 70 specimens) 73 & 74 exclusively from Attercliffe common.

79 Mya invested with pyrites. Lowmoor

Specimens illustrating the bed of marine reliquia containing limestone near the bottom of the Yorkshire bed of coal. *

[80] a. b. c. d. e. f. Specimens of the limestone &c. &c. petrifications chiefly of Ammonites Listeri, many of which are very minute, whence Sowerby (Brit. Miner.) suspects that they are viviparous.

81 Detatched specimens of Ammonites Listeri. Found near Halifax

82 Fragment of which shews traces of foliaceous suture.

83. 6. Cast in the Spire of Amm. Listeri.

In the Museum of the Baptist Academy Bristol

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* This stratum is noticed in Lloyd Gazoph. Ed. all.

is an Hindoo amulet or idol consisting of a round pyritical pebble with an aperture by which the a cavity formed by a cast of the Ammonites Listeri is discovered in the centre; the casts in the opposite sides forming two ✠ cones with their apices directed towards each other. — Casts in the same stone are found at Attercliffe near Sheffield. N° 92

82 Ammonites resembling A. listeri but more flattened & less distinctly striated. Near Halifax

83 Ammonites very flat marked transversely with fine waved lines.

84. Pecten & Mytilus perhaps the same as N° 79 Stanningly

85. Pecten. Near Halifax

86. Pecten on Shale from Idle.

87 Orthocera Steinhaueri Sowerb. Min Conch. Near Halifax

88. Wood with pyrites. Do

89 Vegetable remains substituted by calc. spar in Limestone. Near Halifax

90. Vegetable remains changed into Coal.

91. Sulphat of lime crystalized from the Shalebed. Idle A similar Shale but with less perfect crystals attends the limestone nodules at Stanningly

92. Pyritical cast of An. Listeri Attercliffe n. Sheffield

93. Delphinula? in Limestone near Halifax.

Specimens from the great Shale bed immediately above the M. Limestone in Derbyshire. See Farey.

[94] Ashover black Marble, a subordinate bed in the Shale resembling the Kirkby Limestone.

95. Ashover black Marble changing into rottenstone. Note The rotten stone of commerce used for polishing brass is entirely obtained from decomposed fragments of the Black marble, in which by an inexplicable but undeniable process silica is substituted for calcareous earth.

96. Shale from this bed.

97. Entomolithus paradoxus Ver. A large specimen probably from this Stratum. —

Note. In this Stratum the Orthoceratites which Whitehurst in his Theory of the Earth describes as Crocodile teeth occur — also another species of Entomolithus. — It seems to approach the Dublin limestone formation.

Specimens of the beds of the Yorkshire & Derbyshire Coal formation.

[98.] Micaceous argillaceous sandstone Pudsey delves Constitutes what is called Slate in the W. riding of Yorkshire & is used for covering Houses

99. Arg. sandstone with fragments of Charcoal. Upper bed Pudsey quarry.

100. Soft greenish arg. sandstone. Little moor near Pudsey.

101. A yellow variety of Do. Do.
102 Do. Torrefied for mending the roads. Farnley
103. Bed of indurated sandy clay containing nodules of a harder stone. Tong Mills.
104. A sphere taken from this bed to split to shew that it is of subsequent formation to the stratum.
105. A similar sphere from Bayldon.
106. Stourbridge Clay. The clay on which the coal rests is generally permanent in fire.
107. Pipe clay. Wortley common. Leeds.
108. Cone in cone coral clay. Not an organic remain as is often supposed. See Martin. Wyke
109. Do. Dudley.
110. Shale or Clay slate impregnated by coal. Lowmoor.
111. Do. containing more bitumen or carbon. Tong
112. Arg. micaceous Sandstone with a thin coating of calc. spar? spread like a slickenside. Meersden turner
113 – 118. Grits & Sandstones of Derbyshire. See White Watsons "Strata of Derbyshire."
119. Fine crystalline grained Sandstone. Apperly See Bakewells Introd. to Geology.
120. Millstone grit. Kirkstall. The venerable pile of Kirkstall abbey is built of this stone.
120* Do. with larger grains. Do.

121 - 122 Calcareous incrustations in fissures of
No 103.
123. Septarium from the Mardentunnel. See Bake-
-well. The Tunnel is in the Shale bed.
Specimens of Ironstone
124 Argillaceous ironstone or indurated ochre.
Dudley banks.
125 Arg. ironstone with sulphuret of lead. Wibrey
126. Pyrites collected for the manufacture of
copperas, which is made from the efflorescence
of the sulphuret of iron combining with the oxy-
-gen of the air.
127. Arg. Ironstone with Pyrites. Shelf
128. Arg Ironstone, black with shells of calc. spar. Do
129. The same shells imbedded in limestone. Markets
130. Arg. Ironstone with calc, shells containing cryp-
-tals of quartz and sulphuret of zinc. Dudley
131. Arg Ironstone black & red with calc. shells.
Martin. Petrif. Derb. Derbyshire.
132. Do from the remains of an ancient foundry
near Darnly.
133. Septarium, vulgo Cat's head. River Greta.
134 Do. polished. Northumberl. Do.
135. Do. the separations filled with spathose
iron. Shelf. Accounted a very good ore.
136. Do. Low moor
137. Do. containing less Iron; the spathose Iron
crystalizes like pearlspar.

138. Black arg. ironstone with shells on the surface.
138. Quarry from shells in Ironstone. Lowmoor
Specimens of coal compared with those of other countries.
139. Glance Coal. Thurandt. Germany
140. Kilkenny coal.
141. Coal. Sidney Cove. N. Holland
142. Coal. Ayr. Scotland.
143. Stone coal, Cannel, Candle or Kennel coal Branch, &c. Gildersome
144. Do. from an ancient heap of cinders, an efflorescence of sulphur formed upon it. Tarnley
145. Coal. Ballycastle. Ireland
146. Coal with Dog's tooth calc. spar. Derbyshire
147. Coal with calc. spar. Ashwalton.
148 – 152. Vitrified dross from Foundries – composed of the arg. & silic. earth of the ironstone with the lime used as a flux; serve to elucidate Volcanic & pseudo volcanic productions.
153. Finery cinder. Lowmoor.

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154. Sulph. of Lead in Millstone grit. rare Derbysh.
155. Impression of a bivalve in the Rab of the S. wales coal formation.

L. S.

Quern Sand

Upon the Superior Oolite at Derry hill - Bowood & probably many other places lies a Stratum of Sand strongly impregnated with Iron. The quartz pebbles of which it is composed are all rounded & generally very transparent. In some places as at Redlane in Wiltshire it contains a bed of stone produced by a cementation of the siliceous particles by the ferruginous matter which is so abundant that the nodules used to be collected for the purpose of smelting as is evident from the scoriae of ancient foundries dispersed over its surface. I have not seen any petrifactions in it but the Farringdon gravel pits on the borders of Oxfordshire which seem to be in this Stratum have been famous since the days of Lloyd & Woodward for their reliquiae - particularly those of Spongiae & corals which from their nature appear to have inhabited the waters which deposited the gravel. Its appearance is much like that of an alluvium & it may perhaps uniformably cover the Strata between Clunch clay & the Greensand. Query is the Iron in any connexion with the chlorite of the Greensand? +

S. Catalogue No on Yellow paper

46. Spongiae from Farringdon Oxf.

A. 1. Granite. Dartmoor Devon

2. Granite from above Penryn Cornwal. used for building the Strand bridge - specimen a chip of one of the blocks while preparing in 1810.
3. Granite in a decomposing state - Growan of Cornwal from the China pits to St. Stephens Cornwal. Note. B. at the End
4. D° D° with red spots. from the same place
5. Granite from neighbourhood of Denis, Goss moor Cornwal between the growan and the Shist with a red vein.
6. Granite (or Syenite) with Jaynthe. Criffel.
7. Granite with radiated Shorl - From above Penzance - part of the new Key.
8. Granite from the parish of Constantin near Mawnan Cornwal.
9. Granite near the junction with Schist - D°.
10. Granite from works of Huel Alfred Cornwal near the junction with the schist. - appears to be a vein. -
11. Granite from the works of Gunnis lake near Callstock Cornwal - the Granite dips under the Schist - the specimen appears to be secondary.
12. Granite near Penzance. secondary? - very porphyretic
13. Granite in which the Shorl & quarz have arranged them selves as a vein. -
14. Red Granite fr. Labrador
15. Granite Labrador.
16. Granite very large grains. D°
17. Granite or Greiss with Garnets - very disturbed aggregation. Labrador

◇ Insert dec from Fulneck catalogue Nos
◇1◇ to ◇18◇ ~~and~~ both incl & ◇99◇ & ◇100◇ ◇23◇

A. 18. Vein in Granite of Caern Brae near Redruth Cornwal
A. 19. Granite from an island in the harbour of Rio Janiero. contains a greenish substance qu. Corundum imbedded
A. 20. Granite in which the mica has assumed a feathered appearance n. Redruth? Cornwal.
A. 21. Gneiss. Howth Scalp near Dublin
A. 22. Gneiss - Spain / Rev. J. Townsend. /
A. 23. Gneiss with red veins resembling A. 5. Labrador
A. 24. Gneiss. with Garnets. Labrador.
~~Granite from Labrador &c~~

If Grauwacke is a mineralogical term, it ought perhaps to be applied to several ~~a~~ subordinate beds of clay slate, to several beds of the Rock marle & to some of the Culm Coal formation of Wales.
If it be a Geological term, does not werner mean by it the thinner strata of the Rock marle as in the Neighbourhood of Eyeler, the Quantock hills &c.?
If a stratum vary in its constituent parts from lime to argil & from argil to silex, and vary in its aggregation where its constituent parts are the same from marle to ~~any~~ jasper — Aos pro nov sw.

Shorl Rock. This Rock appears to be but imperfectly known to mineralogists and Geologists; Jameson, respecting its connexion with Topaz rock, & but confessedly from his ignorance of its geognostic characters & relations* & Dr Berger in his Paper on the Physical Features of Devonshire & Cornwal Trans. Geol. Soc. Vol. I. p. 125. mentions that he did not see it in Situ & speaks of it as a ~~rare~~ scarce rock. This is the more remarkable as one of the largest & by far the most beautiful of the isolated rocks of this County the Rocke Rock, consists of the ~~rock~~ the mineral in question which is well described by Borlase. The whole neighbourhood of the Village of Roche & the country from thence to St Stephens Church is strewed with varied fragments of this rock and ~~of~~ of another which appears intimately connected with it, but is still less known & nameless unless we apply the new name of Shorlschist, as it seems to consist of the unorganized substance which forms the Quartz & Shorl of the Shorl rock in alternate black & white layers often singularly & beautifully contorted. I could not from the geognostic situation of Rocke rock, but it appears to be either an immense dyke traversing the Granite and Shist, or an almost vertical bed interposed between the two. The Goss moor, famous for its stream works (producing ~~its~~ wood tin & gold, consists of clay slate (n.c infra) while St Dennis consists of Granite. At Carey Luys Mine, near St Stephens the Shorl Rock & its shist may be seen in situ, for proceeding along the adit which is open to the day the latter is seen, beneath the usual detritus of the country

* Elem. of Geognosy

and appear to rest upon a bed of the Short rock in which particles of Tin are interspersed & which ~~are~~ is worked in an open work forming the most imposing scene in the county boasts particularly at dusk when ~~we~~ visited it with Mr. Majendie.* The wood tin & the variety called toadeye tin have been found I believe only in the neighbourhood of the Short rock. May they not have some connexion with it?

B. 1–7. Short rock from Gossmoor & Rocky Park exhibiting the principal varieties

B 8–12 Do. from Carey Lugo. with tin. 11 & 12. so intimately mixed as to form a purple sandstone

B. 13–14. Short slate – if the name may be used slate apparently of the same constituent parts as the Short rock – perhaps deposited at the same time but arranged in shistous instead of crystalline form; the alternate black & white layers very distinct & often curiously curved & particularly beautiful; occurs in borders all over Gossmoor, in situ at the adit into Carey Lugo mine. –

B. 15. Tin disseminated with Short in talcose gneiss fr. St. Stephens? Cornwall

* There is a plate of this open work in Dr. Daniell's? pedestrian Voyage

Combinations of Felspar

C. 1. Compact Felspar fr. Sea Fell Cumb.d

2. D.o Labrador

3 — —

4. D.o with Quarz in act to approach Horn-
-stone Labrador.

5. D.o D.o with Imp. of Thallite D.o

6. D.o almost pure Quarz. D.o

7 - 8. Compact white Felspar with green Inj.
probably from Copper - forms a rock in
Okkak bay. Labrador. (See Geol. Fr. Vol. II p.

9. - 10. Felspar with Chlorite

Insert F. Catal [49] [94] [95] [30] to [34]

Combinations of Mica

C. 11. Mica. Labrad.-

12. Mica with Quarz. D.o

13. Mica with Felspar

Insert fr. Tuln. Catal. [19] - [22] [37] [36]

Combinations of Quartz. -

C. 14. Rock Quartz. Labrador.

15. Do from a vein in Chlorite Slate Lough Nettern

16. Do disseminated in Chlorite - Near Alfred Consuel.

17. Quartz Rock Hill of Howth Dublin
See Fitton's Mineralogy of County Dublin
& Geol. Trans. Vols. I. & II.

18. Quartz mixed with Calc. Spar Labrador.

Combinations of Hypersthene.

D. 1. Hypersthene - Labrador

2. do. very compact. do.

3. do. with Iron. do.

4. do. with Labrador Felspar. do

5. do. Iron, hexagonal Mica & Felspar do.

Inser. fr. Fulneck Catal. ⟨24⟩ — ⟨29⟩

Combinations of Hornblende

D. 6.* Compact Hornblende. Labrador

b. do.

7. do. —

9. Hornblende & Felspar (Quartz) Hblende schiefer. do

10. do.

11. do.

12 Hornblende, Quartz & pyrites. Labrador

13. - 14 Greenstone, Ironstone of Cornwal

15. — 17. Hornblende & Serpentine? — decomposed into a substance called Mark at Mullion - Alternate seen at times with the Serpentine near Kynans Cove

18. - 21 various Grünsteins.

22. Grunstein decomposing N. of Plymouth

23 Same solid.

24. part of the Altar at Stonehenge

Combinations of Hornblende

D. 25. 26. Hornblende; Mica & Felspar Labr.
27. 28. Grunstein with Actynolite? Labrad
29-30. Grunstein. — Labrad.—

Insert from Fuln. Catal ⟨37⟩ to ⟨42⟩ & ⟨45⟩ — ⟨48⟩

Combinations of Thallite

D 31.—38. Various matrices of Thallite with Quarz, Felspar, Calc. Spar. from Labrador

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Combination of Garnet rock

D39. Garnet rock with Hornblende. Quarz & Mica Labr.

Combinations of Jacynth

D. 40. Jacynths, imbedded in green compact Felspar?
in quadrangular Plates
Labrador

Serpentine.

D. 1. - 52. Serpentine from Labrador & Cornwal com-
-bined with Diallage, with Magnesite, with Ac-
-tinot - decomposing - forming Breccia &c

53 - 59. Steatite - Cornwal - Cape of G. Hope &c.

Substances known in N Britain under the appellation Whin - See Bournon Catal. Min. Fulm. Catal ⟨78⟩ — ⟨87⟩ & ⟨89⟩

These substances are certainly not primitive but belong to the transition trap formation; they are placed here on account of their resemblance to the Nenite & Green-Stones generally thought primitive. - Attendant on these Strata in Northumberland are F. Catal ⟨46⟩ - ⟨47⟩

D. 60 - 66. Uncertain from Labrador.

E. 1. 2. 3. Specimens of the junction of the Granite & Schist or rather Gneiss at St Michaels Mt & Mount-hole in Cornwal

Schists

F. 1-3 Skis apparent Gneiss

F. 4 – 9. Schist with Chiastolite Killeny see D. F. Notes' Dublin – Similar Specimens from Cornwal.

F. 10 – 21. Clay slates from Cornwal, Devon, Labrador. Wales &c

F. 22. 23. Talc slate.

F. 24 – 33. Greenwacke slates? – Cornwal & Wr? Edgecomb.

Insert from Tabn. Cat N° 52 – 62; 64 – 72; 79.

The Kaolin of Jovmoor F. 21. is used for manufacturing a species of pottery which becomes of a fine red colour & resembling some of the Etruscan Vases. The Provincial name Cloam applies to all earthenware.

Elvans. – Specimens of Dykes or veins traversing the Granite Schist formations

C. 1. – 21. Various Elvans described in the Labels

22 – 24. Manganese from Goss moor – a subordinate Stratum?

In cornish mines term everything that is not Granite or Schist Elvan, the term is here restricted to those cross courses or veins which generally traverse the metalliferous veins at right angles and consist of Felspar, Talc &c frequently in the form of Porphyry. The Felspar is very often crystalized in hexagonal plates as in the Porphyry of Polgooth & the quarry not unfrequently in Dodecadral double pyramids Some of the Elvans are complete Granites.

Lias formation

He wishes to assign to the animal a place among the fishes, on the ground that the eye being composed of bone which is a character of the eye of fishes & not met with in the crocodile', but adds 'in this animal there is a subdivision into 13 plates, which is only met with in birds.' Now according to Cuvier (Comparative anatomy) the sclerotic coat of the eye of fishes is not bone but a cartilaginous substance, while the eye of the turtle & of several of the lizards has a ring composed of distinct laminæ as in the fossil animal. The difference of the osseous articulations of the vertebrae from the recent crocodile, and its near allies with the head of fishes, was noticed by Cuvier in one of the species which he examined, and, with the construction of the jaws noticed below only seems to place the animal as an aquatic & probably marine species, on that boundary of the genus Crocodile which borders on the marine Testudines.

from Sidmouth. Lyme.

Lias formation. ~~(See Note A)~~ (Insert AIII 2 leaves)

Crocodilus. The remains of crocodiles or the most ~~large~~ remarkable production of the Lias Stratum; in this country they are extremely abundant.* The neighbourhood of Lyme on the South coast has furnished numerous specimens, the Somersetshire strata near Bath & Keynsham exhibit frequent traces of them. Dr. Stukely describes pa. 15 of a specimen found at Elstone near Newark in Nottinghamshire Ph. Trans. N° 366, p. 963. and in a later Volume contains a description of that at Whitby. Cuvier (Ann. du Musée) investigates the reliquiæ of remains which may at least be termed similar, from Honfleur & Havre, which correspond geologically with Lyme &c. Though the Lias Stratum from defect of calcareous matter appears ~~to be~~ as a blue marle, which at Whitby** from superabundant sulphuric acid & argil it forms aluminous shistus*** which the calcareous matter only collects in nodules. The effect of superabundant silex will be noticed N°

*Linn. d. 1526. 1605–1665. Cuvier Ann. du Musée. Vol. II. Woodward Gen. Vol. II. p. 82.

**W. Bakewell refers the Aluminous schistus to speculative formation. Et. of Geol. p. 360

***Sir Everard Home (Phil. trans. 1814.) has described W. Bullock's very perfect specimen of this animal from Ramsmouth; W. Johnson of Bristol has two fine heads from the same neighbourhood, one of which is drawn across horizontally; the other exhibits almost the whole external part of the skull the snout excepted. The cranium is 3 f ... long appears to have suffered an accidental depression before the eyes, The orbit of the eyes hence thereby (?) become oval but the remains of the Osseous sclerotica ~~Cornea~~ of both eyes are perfectly visible though compressed; W. Brakenridge of

The Lias is distinguished into two or three different subspecies by its colour which is Dingy blue grey of a pale faun colour. They are all used for building stone & to burn to lime; the lime from the blue kinds forms an excellent hydraulic cement for works exposed to moisture according to Smeaton's Experiments,* but is not of a good colour and therefore rejected by plasterers. The white Lias is used for lithography or the art of multiplying copies of drawings by executing them on stone.** The german stocks are generally esteemed richest for this purpose, but there is little doubt that among the variety in the neighbourhood of Bristol & Bath some of equal quality that is of a perfectly uniform grain may also be found. The colour of the Lias appears to be owing to bitumen as does also the fetid smell which renders it a genuine lapis suillus. The petrefactions are mostly confined to the blue Lias and the marle between its beds, though impressions of fish have been found in the white Lias of Somersetshire. The petrifactions, the wood excepted which is merely fossilized or bituminized, are generally calcareous substitutions filling cavities left by the decay of the shell. In the gryphites and other shells which we may suppose to have been nacreous it seems as if the original matter had not been removed but had only assumed a different arrangement of its particles so as to exhibit a crystalline instead of an organic structure, since they never exhibit cavities. Where cavities do occur, besides calcareous crystalisations cubic, & octaedral & dodecaedral pyrites are frequent and sometimes sulphuret of zinc. As these must have been introduced by infiltration through the substance of

*Narrative of the Building the Eddistone lighthouse

**Essay on Lithography by Mr. Bankes. Bath. 1813. The stone

the stone it at least proves the possibility of veins having been filled in a similar manner. Sulphur & iron seem general ingredients of the Lias but in very different proportions. The Lias strata as Mr Sowy observes are among the best ascertained of the British strata - their Existence in France & Germany is also certain but for want of a generally received nomenclature their situation is ascertained laid down with less precision. In England they cover unconformably, the Redground Coal formations & probably sometimes the Mountain limestone - the lowest bed at least where the strata rest upon the Redground as at the Old Passage near Bristol and in sinking for coal at Batt Easton near Bath consists of a vast assemblage of palate Encrini teeth, vertebrae & other animal reliquiae in the greatest Disorder - From this bed are the numerous Specimens cited by Lloyd in his Gazoph. Brit. as collected at Pyrton passage on the Severn in Gloucestershire

1 Lias. from Charmouth

1.A. Vertebrae of the crocodile. ~~from~~

1.B. 3 Vertebrae of the Crocodile with fragments of ribs. Charmouth.

Bristol Road.

1.C. Vertebrae.

1.D. Vertebra, of Crocodile? perhaps of some fish Charmouth.

D.1.E. Fragments of Bones of Crocodile. Bath.

Bristol Mr. I. has the masses of stone containing the vertebrae cortex & ~~metacarpal~~ humeral & metacarpal bones of this specimen; the latter indicate distinctly that it had no fore feet but ~~for~~ fins or flaps like the Tortoise, & a specific distinction arises from the outer edge having the cortex and very small compared with the size of the animal. an emargination in every plate. Mr. Brakenridge of Bristol has a similar piece much smaller from the same place but emarginated in a similar manner. His collection besides numerous of fine specimens of the furrowed teeth so well described by Cuvier, has a specimen of the ~~back~~ lumbar vertebrae in situ the articulating part of the atlas &c. Mr. Sowerby has also a fine head but wanting the snout from Charmouth, Cornua ammonis are attached to the specimen. Mr. Day of Hinton, has two fine fragments of heads also from the S. Coast, one exhibiting the Orbit of the eye, the frontal bones & the articulation of the mandible, the other the form of the snout & situation of the teeth, two of which are singularly large; this specimen unfortunately wants the extremity which is however supplied by another shewing the large teeth at the end of the snout & the position of the nostrils. The most perfect specimen of the Somersetshire animal is Sheltons that in the possession of Mr. P. Hawkes

which I have not seen. Mr. Brakenridge has a head found at Keynsham, but much broken, the eye is however in a beautiful state of preservation & shews the arrangement of the plates which are partly visible & partly removed, very perfectly. Mr. Wilkinson of Springfield Bath has a fine collection of these fossils particularly a most perfect Saw distinguishing the species from Mr. Jackson's by the want of emargination on its anterior edge. He has also some vertebræ perhaps the hind feet with the processes in a very perfect state; Mr. Day most of these were found in the neighbourhood of Bath. Mr. Day has also a fine series of the Caudal vertebræ from the Neighbourhood of Kilmerton. I think it is certain but we have two species of fossil Crocodile in this country, both with feet adapted for swimming, and probably with vertebral as tuberculations resembling those of the Shark, that is with the vertebræ both concave at both ends including a ball of fluid. The species with vertebræ concave on the anterior & concave on the posterior extremity also occur though I have seen few specimens - one is in Mr. Brodie's collection from Charmouth; this is probably the same as one of Cuvier's species; to identify the other only patience, assiduity and science are required, we have abundant data, but they must be examined with more care than Sir Everard Home has done.

probably amphybious marine animals

Lias formation

2) Fragment of the bony beak of some marine animal. *
The polish on the sulcated part forbids us to think that
it was ever covered with muscular integuments, and the
perfect conformity of both sides, does not admit the
supposition that it is a mandible. It must be confessed
however that its analogy to the tooth of the unicorn
or sword fish or sawfish is very slight
Stones not unfrequently abound in Bath generally in
the soft marle between the Lias beds, and attended
with fragments of other bones.

3) Teeth. 2n. do they belong to the same animal that
has the sulcated beak ~~the~~ . ~~in Walcot Bath Pebble~~ **
~~the~~ The finest specimen I have seen is in the col-
lection of the Rt. Hon. Geo. Cumberland. Esqr. of Bristol it consists of
plates. These teeth have a considerable analogy to
those which are found in the superior strata but the
rugæ upon them are much less distinctly marked.
Weston, Salford. Weston

4) Teeth, Differ from the former in being furnished
with points, which sometimes bear very evident marks
of having been worn by attrition. Weston.

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*Townend Mores. Vol. I. Tab. 18. Walcot 65. Parkinson Org. Rem.
** Walcot ~~Bath Petrifactions~~ 68.

5. Scales of a fish. – fine specimens of fish are sometimes found in the Lias beds *

Qu. Are not the fossil fish of Vestena Nova or Monte Bolca in a ~~Lias~~? white Lias? **

6. Thorax of an Ostracion. Mr. G. Cumberland & Mr. Wilkinson have also relegated animals of this class, which are generally supposed to belong to a more recent formation. Qu. do not the fossil crabs of the neighbourhood of Verona belong to the Lias strata. ***

Weston.

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* Townsend Mems. ~~Tab.~~ Pl. 20.

** Scheuchzer Piscium querelae et vindiciae. Gradon. Trans. Ph. Soc Hib.

*** ~~Scheuchzer Phys. Sacr. Tab. 101 reduc~~ Gesner de Petrif. p. 59 Spada. Tab. VIII. Zanichelli museum. V. 54. Scheuchzer Pisc. Querc. Tab. IV. p. 29. – probably Woodward Catal. II. 81. n. 3.

grandis nobis.

8. Plagiostoma. resembling ? gigantea in every respect except that it is distinctly striated and rather rounder. ~~Lackham Bridge Beds~~ 4¾ in. 5. ⅜ in. Bristol.

elegans nobis

10 Plagiostoma, resembling P. minor, but more concave, rounder & very distinctly striated with equal rounded striae. Much less common than ~~the formed~~ P. minor. ~~Bath~~ 1 1/4 in. broad. 1 3/8 in. long Weston Lime pits.

14 P. Plagiostoma ~~nitida~~ laevis, perfectly smooth & without striae 1. ½ in. by 1 3/8 in. Weston limepits

15 Plagiostoma propinqua. Resembles the former, but is deeper shelled & the striae are regular & not very lineal but with a sharp ridge. Weston limepits.

16 Plagiostoma proxima. A fragment. Much like & P. radiis, but the striae flattened and equal. Picked up in from a dealer in Clifton. The mass does not accord with the lias, having silicious pebbles and ~~a considerable quantity of~~ particles of chlorite imbedded in it.

7. Plagiostoma gigantea Sowerby. Min. Conch. Pl. 77. Walcot. 21.
Luyd. Gazoph. 637–639. Woodward II. 94 c. 1. common. Bath
rather longer than broad varies much in size.

† 9 Plagiostoma. minor. nob. much resembling the preceding but
more distinctly striated & less. glossy. Bath &c.
Parkinson. Org. Rem. Pl.

11 Plagiostoma rudis. - nob. strongly marked with elevated
cylindrical striae, alternately large & small, traversed by
lines of growth. Townsend. Moses. Pl. 17. 3. 4 1/2 in br. by 43. long. Weston

12 Plagiostoma - affinis nob. Nearly allied to the former but
more elongated and less 2 5/8 in br. by 3 1/2 in long. Weston. Bad-
minster near Bristol

13 Plagiostoma similis rubi. Resembles rudis in form and
proportions but the striae have
generally two smaller ones between every two larger & are
more regular. Weston.
Note Dr. Wilkinson has this in his coll.n rec.d from Mr. Townsend a spe-
-cimen of a beautiful small Pl. the two valves united. The
shell is elongated & Deeply striated with wide sulci separated
by sharp ridges. Resembles Cornu brank Pl.
but is distinct by wider & deeper sulci. Walcot. 22.?

17. Pecten. two eared.
circular, concentrically striated marked
smooth, flat

18. Pecten with two ears? about 22 rounded striae
disposed in plain. breadth & length 3/10 in. Weston pits.

19. Pecten two eared, oblique with about 18 or 20 distant
Deeper than the former.
striae. very frequent in the marl between the lias be-
but difficult to obtain perfect. - Weston.

20 Pecten. two eared, finely striated.
An imperfect specimen. Weston.

21. Pecten, minute, oblique on the surface of the bed of the
lias
Westbury

8

10c

14 9.

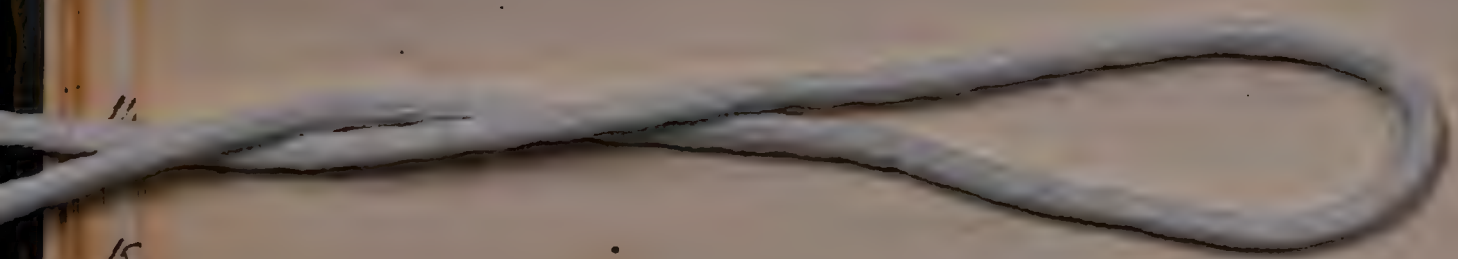
15 Pl

16 Pl

22.A Gryphus. — The distinguishing fossil of the Lias beds. The shell
this species does not occur except in any of the Stratum
though it approaches the Ostrea Labata. — Westbury Severn
Tuerton, Radstoke.
22.B. Gryphus — in this specimen the shell is transformed into
22. C. Silex, an illustration of the possibility of the formation
of siliceous petrifactions in a calcareous Stratum.
There are traces of that concentric configuration on the
surface which generally appears in siliceous bodies formed
by infiltration and which gives the zones to Agates,
&c, as if the fluid had been supplied only from lateral
-las points. From the coast of S. Wales, from Revd. W. Conybeare.

22.D Gryphus — The under shell attached by its outer
surface to the stone; in this position it might easily
be mistaken for a distinct species.

22.E Gryphus. — A specimen so much distorted as to
appear a distinct species.



1½ in. broad 3½ long, flat

26. Mytilus? a cast abundant ~~in the blue lias~~

Keynsham. Tweston.

27. ~~Vega~~ Mytilus a cast. 1 in broad ~~by~~ 1¼ long.

Tweston.

F

28. Venus? a cast heart shaped on one side like several of the casts in the inferior Oolite &c.

In the soft lias beds near Bedminster.

N.B. Mr. Cumberland has a beautiful Modiolus from the Lias of Keynsham.-

29. Pinna. As far as the imperfect state of these fossils permit us to decide, this certainly belongs to the genus Pinna to which many shells have been falsely annexed. The shattered Specimen N° shews that the recent shell was so deep as to have formed almost a cone. The transverse fibrous texture is very perceptible The workmen call the casts tongues. Weston.

F

23. ~~Vega~~ Mytilus or Mya? 1⅜ in. broad. 2 in. long. obscurely marked with lines of growth. The beaks approaching & placed ⅓ from the extremity. Near Bristol.

24. Mytilus? Resembling the former somewhat less & deeper and marked with a few slightly projecting ridges from the hinge to the edge; the hinge near the extremity.

Salford.

25. Mytilus? Nearly as deep as broad, larger than either of the former & approaching the Bucardia of the superior strata.

Weston.

31 Anomia Resembling the former but with the striae much less distinct. Qu. is this a cast of the former?
Keynsham.

32. Anomia. Of the same figure & family as the two former but with the triangular opening elongated, & the beaks more distant. —
Salford.

33. Besides these there are several species of deep ribbed Anomiæ with a perforated beak, which it would require minute investigation to discriminate, imbedded in the clay between the less beaks

Townend Moses. Pl. 17. fig. 5. Walcot. 23.

30 Anomia.
This and the 2 following species belong to that subdivision of the genus, distinguished by a triangular opening between the beaks. The internal structure figured in Walcot, shews the propriety of placing it among the Anomiæ & Terebratulæ
Keynsham and Salford.

Insert Sowerb. Min. Conch. Pl. 19. fig 3.2. I doubt whether the species be the same from the wide distance of the strata. On the cast of a Turbo. Weston.

35 Tooth of an Echinus? Bird's beak vulgo. - It resembles, in form, the tooth of the Sepia or cuttle fish, but the latter is only a horny shell investing a muscular or cartilaginous substance, whereas this appears to have been solid bone.
Weston nr. Bath.

36. Minute spines of Echini - from the clay between the limbeds. -
Weston.

37. Belemnites

38 Nautilus (two large for small (Cabinet) The generic difference of Nautilus from Ammonites to be of utility in distinguishing fossils must be taken from the simple & the foraminous edges of the two genera & not from the pervious or concealed inner convolutions. This species of N. is very common at Weston &c. and the cavities very frequently to contain a cubic crystalisation of carbonate of lime. No. 38.6.
Walcot. 44*.

39. Ammonita. maxima nobis Walcot. 40.
Distinguished by a double sulcus along the back and elevated, simple distant ridges across the convolutions, flat convolutions widening very gradually. Common of various size, but generally ponderous. — Weston. Tweerton

39.B. D° impression with Pyrites. Tweerton

39.C. D° a single joint. Keynsham. —

40. Ammonita, Salfordensis. nobis. convolutions widening more rapidly, with transverse ridges closer than in the former, bending so as to meet on the back in a feather the angles pointing towards the opening. Feather interrupted where they meet. — Salford, Bristol Road.

41. Ammonita, interrogationis. nobis. flat, convolutions rapidly widening, marked with ~~striæ~~ flattened striæ emerging in radii from the centre, till half way across the convolution, then bending like a sickle with the concave edge towards the opening, so as to form the figure of ? The striæ seem to meet in a feather on the back. — Stone house, vale of Severn.

42. Ammonita. convolutions slightly convex, gradually increasing, marked with distant striæ convex ~~[illegible]~~ towards the opening. The back an even elevated ridge. Glastonbury.

43. Ammonita. complanata nobis. — Flat (qu. by compression?) with fine transverse striæ, convolutions gradually increasing. The nacreous coat is preserved, which shews the affinity of the Genus to the recent Nautilus.

44.A Trochus. Convolutions ~~with~~ striated with Watchet
a double row of projecting tubercles, and an elevated line between them. Casts frequent, & the impressions of the outside. seldom as N° 44. a. where the shell is restored by carbonate of lime. Weston &c.

44.B. D° casts, in the encrinite of this Trochus. Walcot. 48.

44.C. D° ~~sulphuret~~ sulphuret of iron substituting the shell.

45A. Pentacrinus Caput medusae? From old Passage
45B. Part of a Column. Weston. –

46. Entrochus. part of a column with circulated joints
Weston.

47. Wood, ~~a~~ other accayed from fossil; – ~~from~~ Near Bedminster
Wood. Chewmouth.*

48. Globular Pyrites from the dear bed at Keynsham. –
49. Calcareous Spar from the cavity of a rabbitus. ~~Exacton~~ Weston
Similar crystalisations with the two latter, which may be
termed Vein formations, seem to prove the possibility that
metallic Veins were filled by infiltration. Sublimation & Deposit are equally
out of the question here.
*N3. Mr Brackenridge has a distinct specimen of a fulica
in white Lias from Knowle near Bristol

From Tulneck Catal.
32. – 37. Cornu Ammonis &c. from Whitby
29. Pentacrini. Germany
19. Encrinus Caput Medusae Chewmouth.

Blue marle, between the Oolite
and the Lias Lime formation. —
When the Calcareous matter is abundant in this bed, or
perhaps from other causes concretions are formed, some-
times of considerable magnitude; they are often Septaria
that is, have contracted in consolidating & the fissures have
afterwards filled with carbonate of lime. If these septa-
ria have been exposed to the air, the spar decreting its action
more than the marle hinders & presents ridges dividing
the surface into polygonal scuta, and the masses then
go by the name of petrified turtles. When cut & polished
they afford fine specimens for inlaying chimney pieces &
are called by the masons Turtle stone or Ocoid marble.
In the neighbourhood of Bath these concretions are rare
and in general the petrifications of this bed badly preserved.
Mr Townsend gives it a thickness of 70 feet, it is occasionally much more.
Peeten.. in the Blue marle below Beacon hile Bath

Belemnites.. attending the following Specimen. — Shaw
also noticed them in the blue marl of Cannd cliffs.

Corna Ammonita ~~vespertilio~~ - Habit of a Nautilus but
with foliaceous sutures. Convolutions rapidly increasing very
convex, ridly striated across, with ~~a double~~ two rows of
tubercles towards the centre. No ridge or sulcus on the back.
Purchased from Mr Duffield.
Ammonita. Spire cylindrical with plain distant
high annulus, no ridge at the back. Sidney Gardens.
South Coast near Weymouth, Canal beyond Bath hampton.
Ammonita. Flat; convolutions very gradually in-
creasing, marked with distant simple ridges, each of which
is terminated by a prominent tubercle, both towards the centre
& the circumference, the back simply convex. The Nacreous
shell is preserved, on part of the Specimen. Weymouth?
found
Shaw noticed joints of the Pentacrinus in this Stratum at Bath Hampton.

Superior Oolite (Insert #)

Sup. Oo. Spatangus Echini & Spine of large Ech
— Ostrea incumbent at Edge between
— Ostrea from Incipient & Devizes

From Tubn. Coll.
No. on Yellow paper
17. Nummulite from Calne
18. Do. from the Pyramid of Ghize - query whether of this stratum. The absence of these petrifications about the pyramids is noticed by Strabo. Geog. They have been attributed to the remains of the lentils which served the workmen for food.

#

The Superior Oolite much resembles the Great oolite but is generally of a looser texture, as if the cementing matter were rather of a clayey than of a spary consistency, it seems also to be of a much less consistant nature as a bed having been detected in but few places. It appears of its greatest thickness near Calne which is built of it. The petrifactions are not numerous, the most remarkable are small Echini somewhat resembling those of Long Leat & fragments of nacreous shells in the Stone.

Inferior Oolite Calcareous Sand &c

In some places this stratum concretes into a species of stone
but not in layers like the former, but in consequence of
some change in the deposit, this appears from the sur-
face of the bed being frequently the sides of colonies of
mytili, the upper opening of whose habitation must
have had communication with the water. In this
sandstone a few petrifactions occur, in the sand itself
as far as I have observed, none. The thickness at Batheaston
Wansdyke hill may be about 40 feet at Bailbrook house it is more.
Calc. Sand.

Bivalves &c. Dorsetshire
Batt
on from
Smeltzer &c. Glastonbury
Sand Stone with the mytili Batheaston

NB. Mr Townsend has a very large species of Plagiostoma, larger
proportion than Hta P. gigantea found near Midford.
and large Ammonites the not unfrequent below Bath Easton & Cathorine.

Superior Oolite (Insert #)

Sup. Oo. Spine
Pinnula Echini of large Ech
— Ostrea mamed at Edge
— Ostrea

From Sulm. Coll.
between
from Chipet
& Devizes

No. on Yellow paper
17. Nummulite from Calne
18. Do. from the Pyramid of Ghize - query whether of this Stratum. The abundance of these petrifactions about the pyramids is noticed by Strabo. Geog. They have been attributed to the remains of the lentils which served the workmen for food.

#

The Superior Oolite much resembles the Great oolite but is generally of a looser texture, as if the cement matter were rather of a clayey than of a spary consistency, it seems also to be of a much less consistant nature as a bed having been detected in but few places. It appears of its greatest thickness near Calne which is built of it. The petrifactions are not numerous, the most remarkable are small Echini somewhat resembling those of Longleat & fragments of nacreous shells in the Stone.

Inferior Oolite Calcareous Sand bed

In some places this stratum consists into a species of stone
but not in bars like the former, but in consequence of
some change in the deposit, this appears from the sur-
face of the bed being frequently the nidus of colonies of
mytili, the upper opening of whose habitation must
have had communication with the water. In this
sandstone a few petrifactions occur, in the sand itself
as far as I have observed, none. The thickness at Bloa
Bloagn hill may be about 23 feet at Bailbrook house it is more.
Calc. Sand.

Ammonites fr. Dorchshire
Bath
on from
Smallones fr. Glastonbury
Sand Stone with the mytili Bath easton

N.B. Mr Townsend has a very large species of Plagiostoma, Deeper in
proportion than P. gigantea found from the Sandbed near Midford.
and large Ammonites are not unfrequent between Bath Easton & Cathrine.

Superior Oolite. (Insert #

Sup. Oo. Minute Echini of Spine of large Ech
— Ostrea inserted at Edge
— Ostrea between
From Tubn. Coll. from Cirpes & Devizes

No on Yellowspar
17. Nummulite from Calne
18. Do from the Pyramid of Ghize - query whether of this Stratum. The abundance of these petrifactions about the pyramids is noticed by Strabo. Geog. They have been attributed to the remains of the lentils which served the workmen for food.

#

The Superior Oolite much resembles the Great oolite but is generally of a looser texture, as if the cement that matter were rather of a clayey than of a sparry consistency, it seems also to be of a much less constant nature as a bed having been detected in but few places. It appears of its greatest thickness near Calne which is built of it. The petrifactions are not numerous, the most remarkable are small Echini somewhat resembling those of Long Leat & fragments of macroc shells in the Stone.

Inferior Oolite Calcareous Sand &c

This stratum changes in some places into a species of stone but not in masses like the former, but in consequence of some change in the deposit, this appears from the section of the bed being frequently the molds of colonies of mytili, the upper opening of whose habitation must have had communication with the water. In this sandstone a few petrifactions occur, in the Sandite only as far as I have observed, none. The thickness at Batt Hagg hill may be about 20 feet at Bailbrook house it is more.

Calc. Sand.

Oolites for Dorsetshire
on from Batt
Smeltons &c. Glastonbury
Sand Stone with the mytili Batt Easton

N.B. Mr Townsend has a very large species of Plagiostoma, Deeper in Inspection than the P. gigantea found in the Sandbed near Midford. Large Ammonites are not unfrequent between Batt Easton & Cathorine.

Inferior Oolite.

This stratum exhibits the true oolitic structure much less frequently & in a less perfect degree than the great & Superior Oolites, some of the beds however bear decided marks of its being originally a Deposit of shells ground down to sand & calcareous sand. The lowest mixed with bed consists of an aggregation of corals, chiefly or entirely madrepores which inhabited the surface of the Sandbed & were invested in a stiff clay; their original forms appear to have been very irregular, and they were intermixed with oysters and terebratulae. The petrifaction of these zoophytes appears to have taken place by the clay or mud filling the cavities & tubes of the coral and thus completely enveloping it; after this envelope had gained consistency, in some cases the coral was entirely removed and ~~in consequence~~ a cast exhibiting the forms of the cavities left of the coral ~~[illegible]~~, the tubes of the coral appearing as fine cylinders grooved on the outside or as a number of pyramidal ~~grooves~~ sulcated bodies converging towards a point.* In other cases either the calcareous matter underwent the process requisite for its assuming a crystalline appearance, or other calcareous matter was introduced by infiltration. I am inclined to think that the former was the case from the denseness of the mass and ~~the~~ fine grain of the mass, whereas in sparry substances formed in cavities of shells decidedly by infiltration the sparry facets are generally as wide as the cavity will admit. The petrified corals admit of a good polish and when the stars differ in colour from the mass as when they assume an orange hue, the specimens are beautiful. This bed affords the best materials between the Lias and the Hinton or Shotover grit for mending the roads its debris also constitute the greater part of the deposits of alluvial gravel at Lambridge, the Crescent fields &c.

* The casts of the Porpital madrepores present an appearance exactly resembling the lamellae of different species of agarici.

NB. The bed of large Pectens, immediately above the Trigonia bed, is very distinct among the rubbish of the Canal near Stoke.
The hog-cow oyster also belonging to the Trigonia bed abound^{t} in a field at Coombe

Among the various separations occasioned by causes & changes in the deposition of the strata, there is one in the neighbourhood of Cross Lands Sodbury & Horton which may be traced to a considerable distance by its being surmounted by a bed of fossil shells of variable thickness and by their varying degrees of preservation exhibiting good lessons in the science of petrifactions. In one of the pits near the Roman Camp at Little Sodbury this bed first appears consisting a thin stratum of dark coloured clay, much like recently indurated mud, in which traces of the trigonia costata are very distinct but no traces of calcareous spar. A few hundred yards farther north is another pit the stratum is much thicker, has the consistence of a friable stone & has furnished moulds for receiving by infiltration the most perfect specimens of the trigonia costata, clavellata &c. that we have yet seen. At the distance of about a mile & a half on the brow of the hill overlooking the village of Horton, the stratum is perfectly distinguishable by its fossils but is so consolidated indurated that it is not possible to extricate them whole. This stratum I have noticed also between Sodbury & Wooley, but the petrifactions were too imperfect to admit of being taken from the ~~stratum~~ bed. The lowermost bed of the Inf. Oolite where it comes in contact with the sand at Midford contains fragments of ferruginous petrifactions particularly ~~commonitae~~, which would be the detritus of ~~a former~~ the older stratum containing petrifactions. Mr Townsend says that it frequently contains shingle & rolled quartz. I only recollect one instance in which I observed it, viz.

In general in the neighbourhood of Bath, real petrifactions or substitutions of calcareous spar in the cavities left by the

remoual of Shells are rare, except in the tribe Ostrea, Terebratula &c. or ramous Shells which probably furnish the calcareous matter now for mineralising the Genera Trigonia, Venus, Cucullaea, Mactra, &c. &c. probably portal ramous shells
" " alone left the casts formed in their insides which are frequently insufficient to determine with certainty the figure of the Original. The thickness of the Inf. Oolite varies from 40 to 106 feet - It forms the brow of Beechen Cliff & Beacon hills & the Summit of Dundry, Stapleton &c. &c.; the Canal exhibits a fine section of it near Stoke.

Inf. Ool. 1. — 2 Cast. Coral Hand
3 — 8. Do. W. Beacon
9 — 11. Cast Midford
12. Serpula vanium Clay
13 Bone? W. Beacon
14. Stem of Coral? W. Beacon
15. — 21 Ammonite. Charlcomb. Midford
22. Belemnite Comb Hay
23. Area? Coal Hand, Little work Com. H.
24. Turbo Beechen Cliff & Hand & Dundry
25. Cucullaea Coal hands
26. Fistulana fallax. Mytilus Midford
27. 28. Modiolus Beacon Hill
29. Do. Beacon Hill
30 Pecten? Polygir. glyptus Lloyd Hill
31-34. Venus. Coal Hand
35 — 40 Trigonia. Coal Hd
41. Cast in Trigonia Prior Park Coll

Spl Co. 42. Castor vs Turbos.
43 — 48. Pectin — & Ostrea Gigas — Khands
49 — 52. Buccardites
53. Chama
54 — 56 Varvins Echini Beacon Hill — Crop 1.49
57. Trochus Cron Lands
58. Turbo do Murex do
59 — 61. Anomia (Terebratulæ)
62. Arca; Cron Hands
63. 64. Small Shells from Cron Hands
65. Voluta Charlcomb.
66. Shingle of Quartz in Inferior Oolite Mt Beacon,
67. 2 Septumenta of a Coral. Amm?
(several duplicate Tickets)

From Fulm. Catal. Nos on Yellow paper
16. Impression of a Madrepore. Mitford.

On the top of the Inferior Oolite we generally (unless removed by local causes) meet with a bed of stiff clay, wholly scanty vegetation of which, in which rushes are the only luxuriant plant, immediately betrays its situation to the eye. In this stratum there is generally a subordinate bed of Fullers earth which is worked in the neighbourhood of Bath at Midford. The Stratum abounds in petrifactions of ammonites, trochoratulae & a small encrinital Astrea which shew its surface where it has been exposed to the air. It may be observed on the ascent to Smallcomb wood, near the top of Lansdown & Kelweston Round hills, above Swanswick; under Farley Rocks &c. and dislocated masses occur in the precipitous part of Beacon hill. Its total thickness may vary from 40 to 140 feet; besides the fullers earth it has a subordinate bed of stone sometimes of very considerable thickness & hardness, as at Bordman Castle Comb, where it does not appear to contain any petrifactions.

1 Fullers' earth.

White Clay. Fullers' earth & Fullers' earth
rock above the Inferior Oolite. (See Lopos. 1 page.)

Fu. E. 1. 2. Plagiostoma & Mya. Small coral Bath
3. Fragments of Bradford Engraving
4. Fauna of Fullers of Bradford Clay. Jones

Anomia Tenebratula

Anomia Plicatella

Mytilus with striae meeting in an angle
Described by Parkinson from Bedfordshire
Org. Rem. Vol. III. Pl.

Cucullaea. The striae near the edge crossing
those which cover the disc. Wallcot.

Ostrea.

Mytilus Modiolus -

Mytilus ... in the Oolite ... islands, none of them ... Repetitions I have except No. 1. of which there is a ... The others may easily be referred

Great Oolite. Bath Freestone &c. –

This collection of beds has given name to the whole series to which it belongs from the Lias to the Oxford Clay (exclusive) ~~upwards~~. The most useful bed is that which has furnished materials for building the city of Bath, in which the oolitic structure is very distinct & uniform and interrupted by no organic remains. To me it appears (though I know I differ herein from men by far my superiors in observation & geological knowledge –) that this structure is owing to a chemical arrangement of the constituent particles but not to the mechanical aggregation of a quantity of sand formed of the detritus of shells chiefly of the foraminous nature. The ~~observations~~ arguments upon which this opinion is founded are, first the gradation of the oolitic structure into a really oolitic pebble of which are evidently fragments of shells; secondly the arrangement of the oolitic globules in the interior of cavities which appear to have been occupied by a soft substance since removed, which arrangement exactly resembles that of particles of coarse sand or foraminous shells ranging themselves to the form not only of the shell &c. which have been removed but of the fragments which are interspersed among it; thirdly the difficulty of supposing such a solution ~~of the~~ or suspension, or change of place of the particles without obliterating the organic remains which it contained; fourthly the actual formation of stone from a ~~recent~~ shelly sand, by the cementing power of water impregnated with calcareous matter, on the N. coast of Cornwall. Upon examining the specimens of freestone it will be frequently, indeed generally found that the globules are cemented together by a harder spary cement; this cement resisting the weather while the globules themselves are washed out, ~~often~~ ou-

seem a minutely cellular surface the pores of which afford shelter to those particles of soot floating in the atmosphere which alter the true appearance of the Bath freestone after exposure for some time to the air; now this structure seems precisely what would be occasioned by the infiltration of water containing carbonate of lime over a mass of shell sand; when the sand was once inclosed in this manner by stony calcareous matter various changes might take place in the particles similar to those which obtain in entire shells similarly situated or they might from infiltration into their substance become ~~radiated~~ that assume a radiated or concentric structure which in the ~~shell and [illegible]~~ is said to occur in some of the Oolites. In the Monkstone Hampton Oolite the fragments of shells and even minute shells entire are abundantly discernible, and the large quantity of cementing crystalline matter seems to render the stone so much harder than the generality of the same bed.

It is a remarkable circumstance belonging to the Great Superior Oolite & perhaps arising from their structure, that the transverse divisions of the beds are generally in a diagonal direction giving the stratum the appearance of consisting of a series of inclined beds deposited upon & surmounted by horizontal beds. Mr. Townsend notices the circumstance (Moses. Vol. I.) but seems doubtful whether it be not the effect of stratification. Mr. De Luc in noticing the circumstance at Anthony, or Entry hill near Bath observes "this the stone appears to belong to a particular species of limestone, which is formed, like the columnar basalts, to divide itself by straight planes across other kinds of divisions; as is seen also in a certain species of slate." Geol. Trav. Vol. II. p. 243. The quarries at Box at Hatt beyond Ringsdown and in the Superior Oolite at Calne all exhibit the same appearance.

the upper and lower beds of the Great Oolite are of a very different character from the freestone bed, consisting mostly of loose shells separated by earth of a reddish hue, and exhibiting on their surfaces numerous fragments of oysters & other animals. They are much harder than the freestone and are used for dry walls & fences. Among the lower beds at Lord Ashton I noticed one which had assumed a pebbly appearance resembling the grit of the Hinton sandbed; it also occurs above Swanswick, but thinner. Corals, particularly Tubipores & Madrepores are frequently the upper beds and masses of them are found where the beds themselves are removed. The upper beds bear very distinct marks of having been the bed of the ocean in a state of rest by the very undisturbed state in which some of the more delicate petrifactions are found upon them e.g. the specimens No. 1–10 below.* The situation of the Gt. Oolite in the Neighbourhood of Bath is well known. On Kings down & Combe Down the whole or nearly the whole thickness of the beds form the brow & summit of the hills, while fragments which have been separated by the undermining force of the same power which formed the valley have in many places glided down the descent & present the rock at an apparently lower level. On Lansdown only the lower beds are left, the building stone or Ashler bed being wholly wanting, & English corn barrow hill consists of a small portion of the lower beds. The Rev. W. Townsend Aveline states the Stratum a thickness of 120 feet

* Mr. Lukis describes the stones on the summit of Combe Down & among Tarley rocks as exhibiting marks of the labours of Pholades, which he supposes to have eroded them when they were covered by the sea; but a more minute examination shews that the mass of which the stone were formed was pervaded, previous to its induration, by cylindrical & branching substances (perhaps sponges or molluscae) which prevented the stone from acquiring an equal degree of hardness throughout. When such fragments of stone have been exposed to the action of the air & rain for some time they exhibit the eroded appearance alluded to; but the softer places may be traced in the rock when first split from the quarry. I have thought that in many places they appear to have penetrated from the superior surface of the beds downwards.

22. Alcyonite? Conkswell.
23. Plagiostoma } Near Bradford
24. Terebratulae }
25 Minute Shells &c Bradford Road

From Fulh. Catal. Nos on yellow paper.
46. Turbo.
53.
54 } Sp. of Bolita with Calc. Spar. Yorkshire

† Upon the Astropodia are spots formed by Coralines noticed by Mr. Townsend, & visible on many specimens. Joints of the Stem &c. occur at Farleigh down & at Pick-wick as well as at Bradford.

White Clay above the Great Oolite

The Strata between the G. Oolite & the Cornbrash appear to be very variable, both as to their thickness and as to their appearance. The Bed of white clay which covers the G. Oolite at Bradford & which is remarkable for containing the Bradford or pear Encrinus,* is seldom met with as distinctly as at that spot though it may also be found at Purbeck. Its thickness may vary upto 10 or 20 feet.

Bradford Encrinus. Fragments of head & body or trunk

Astropodia; the organ of attachment of the Bradford Encrinus.

Fossils on the upper bed of the G. Oolite which must have been the rocky bottom of the sea in which it lived & consequently have been deposited & consolidated previous to the growth of the Zoophyte. Consequently if there was the superincumbent pressure of any other strata at the time of its consolidation, they must have been removed previous to the deposit of the Clay.

Pentacrinus of the Bradford Encrinus. Mr. Slumbelland has collected sufficient of these to restore the entire shape of the limb.—

Fragments of Shells corals & Echinidæ.

Terebratula trigona Parkins.—

Terebratula reticulata. do

inserts sponte ✝ Ostrea

* Parkinson Org. Rem. Vol. II. describes this fossil well, but it is needless to say that his suspicion with respect to the dislocation of the Stratum on which it occurs is unfounded. The finest specimens of the fossil that I have seen are in the collections of Mr. Meade & Mr. Geo Cumberland.

Hinton Sand & Grit

Between the Combrash & the Lg. Oolite there occurs frequently a bed of sharp Siliceous sand, used in the foundries for making moulds, which by the intervention of calcareous & perhaps carbonaceous matter in some places consolidates into plates of grit, frequently containing blebs of mud, but seldom if ever petrefactions; from 3 or 4 to 20 or more of these plates, which hardly constitute beds, are found above each other, separated by a greater or less thickness of sand. Where the sand & grit are thickest, they may amount together to 40 or 50 feet as at Malmesbury & Hinton. In many places however both sand & grit are wanting, & all that supplies ~~the~~ their place is a white clay full of gritty shivers or thin plates of grit. ~~And~~ A similar bed is generally found ~~below~~ between the Forest marble Combrash and the Grit, and even alternating with the beds of combrash & Forest marble. The Grit is the most valuable & durable material for the mending of roads in the Neighbourhood of Bath. It may be observed at the Village of Hinton & on the left of the road from Corsham to Chippenham.

Specimens of the Grit from Malmesbury

Cornbrash & Selenitic Clay. –

This stratum forms a considerable part of the surface of Wiltshire & the southern parts of Somersetshire and is generally distinguishable by the peculiar yellowish red soil which it furnishes. Its thickness appears to vary much though it seems to be a constant stratum, and the quality of the rock is equally variable. Where it is very thick some of the middle beds are sometimes with traces of the Oolitic structure extremely compact & from 3 to 15 in. thick seperated by thinner layers of clay. it is then, as near Malmesbury, used for building. these beds, as well as the earth between them abound in petrifactions but they are rarely well preserved. The upper beds of the stratum are of a more slaty texture but broken up into small fragments with reddish tenacious clay between them. They contain very few petrifactions. The lowest beds appear to be generally of a very crumbling texture which seems implied by the term Brashy. They contain the most numerous petrifactions, particularly the Terebratula N°. 19. and the Echini 22 – 25. Most of the beds afford tolerable materials for mending the roads, and the numerous pits opened to obtain them afford an easy opportunity of examining the stratum. On the whole it bears a strong resemblance to the upper beds of the G. Oolite and may be from 20 to 60 feet thick. Above it there lies a bed of whitish clay used for bricks at Chippenham which generally contains well defined crystals of sulphat of lime. Its thickness frequently exceeds 10 feet.

Cornbrash

Cornbrash & Selenitic Clay.

B. 1. Trigonia costata — Cowbridge Wilts
2 Trigonia — do
3–7 Casts in Bivalves qu Venus. — Chatley
8. Venus. — Malmesbury
9.–12. Pectens. — Wilts
13. Pecten — Chatley
14. 15 Plagiostoma — Langley
16. Bivalve — Malmesbury
17. Spinous pecten. — Langley
18. 19. 20. Terebratulae. — Chatley
19. Serpula(?) in this Stratum
21. Mytilus Modiolus. — Chippenham
22 – 25. Four Species of Echinus. — Chatley &c
26. Buccardium — Chatley
27. Buccinum? Murex? — Alford
28. Voluta — Farley
29–31. Palates — Alford
32. fragment of a Cancer. — Chippenham
33. Specimen exhibiting inside of Terebratulae filled w.h Calc. Spar — Chippenh.
34, 35. Cornu Ammonis — Cowbridge Wilts
36. Fragment of large Bivalve — do
37. Bivalve. — do
38. Mytilus

C.B. 39. Pappite. Malmesbury

From the Fulm. Catal. No. on Yellow Paper
9-13. Various palates. Affords.

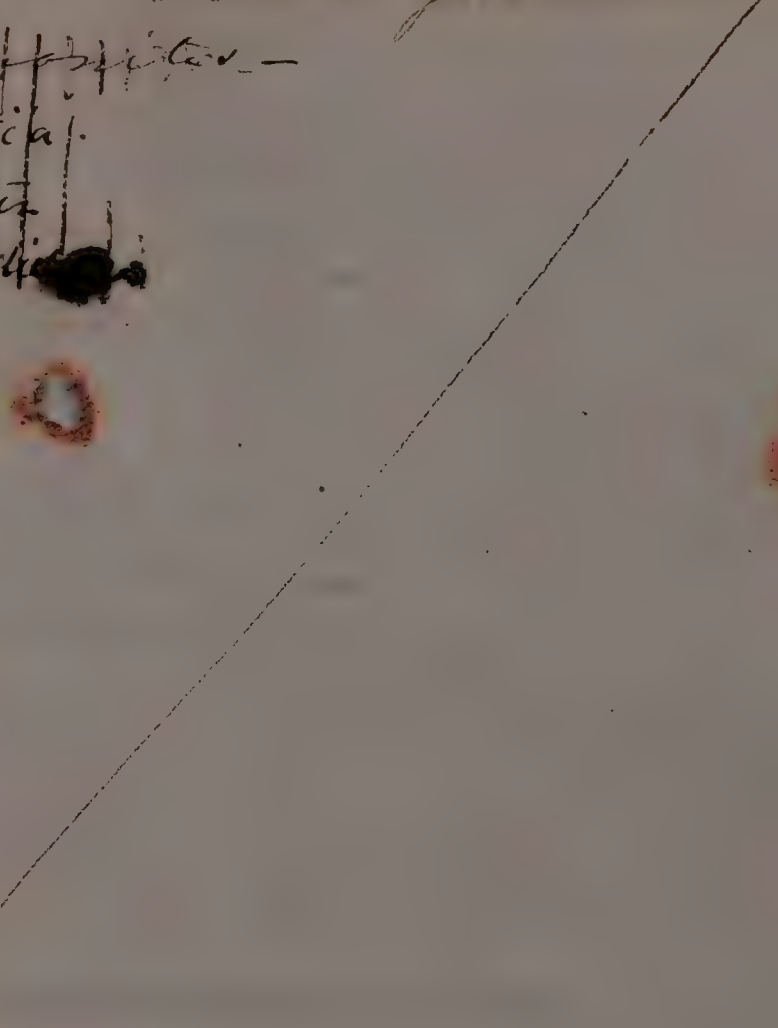
Selections from Hand. -

Ammonites -

Nautica.

Pecten

Mytilus



Immediately above the great blue clay occurs at Hast hill, Derryhill &c in Wiltshire a bed of reddish fruit-ful sand which in many places contains a bed of stone consisting of the sand cemented together by calcareous matter sometimes almost in a crystalline form so that the stone on being fractured glances with a sattin lustre in different directions; occasionally the cement is strongly ferruginous & even pyritical. The more spar-ry the stone, the fewer the petrifactions. The sand contains remains chiefly of nacreous shells.

S.L.G.

Modiolus nanus Nob.— In some respects resembles the Polygyna lyra vera (Linn. 560) Inferior Oolite and Greensand . It casts are abundant in some of the beds and may easily be mistaken for Solens.

Sandy lane near Chippenham. — occurs also near the Black dog 1 m. from Calne & at Brentbill Wick.

Pecten. very common on the rag of Brentbill Wick Hogs back. oysters from the Sand between the Grit & the Clay in the Sand

Ostrea? Very abundant in a gritty stratum imbedded in Sand between the Coral rag and the Clay but I am not certain whether identical with the Wick hill & Derry hill Grit.

From Fuln. Coll:

No. on Yellow.

39. Pecten. from Filey bridge Yorkshire

Ammonite with double rows of Spines from Sand near Devizes.

Single chamber ? Do. from Wick hill

Note. The Melksham Saline Spa rises in this Stratum a part of which appears above the Spring & is thrown out by the great clay bed, which is the Stratum of the whole plain country in that neighbourhood.

Kellaways Grit

Kellaways Grit and Kellaways Sand

&c.

This stratum appears to be very imperfectly known; it lies between the great Cornbrash and the Oxford clay and is perhaps only a subordinate bed of the former. It has been found in situ only in a few places: at Kellaways Bridge near Chippenham from whence it has its name, between Chippenham & W. Tytherton in crossing the river where it was formerly a mile wide, and at two or three places between Chippenham and Malmesbury. It is a hard but brashy grit full of Petrifactions particularly the Ostrea Labiata & two or three species of Corne Ammonis. Sometimes it consists almost wholly of Terebratulæ & again of Pectens. Mahr abounds in decayed wood & at [illegible] it contains numerous impressions which can hardly be attributed to any other than vegetable ramification. The more solid part of the bed, as lime or rock gets weathered & partially from oxyd of iron. Silex is the principal constituent part of the matrix but the petrifactions are invariably Carbonate of lime & are sometimes extremely beautiful. Plotts Oxfordshire & Morton's Northamptonshire contain several figures which seem attributable to the Kellaways Rock. This bed is attended by a bed of fine coloured sandy clay which rests on the calcareous clay above mentioned & perhaps contains the Kellaways rock in the manner that Mr Horton says does its Grit. This sand frequently between Malmesbury & Chippenham contains flints which seem alluvial. Every where the sand strata seem merely an alluvium resting unconformably on the Cornbrash.

From the Tabn. Catal. No. on Yellow paper

No. 58.

A parcel ticketed tied up in Br. Papers.

Vertebratulae. They are generally deeper broader and narrower than the generality of the Genus, with two plaits. Frequently they have been entirely or partially filled by an infiltration of the calcareous spar which has consolidated the grit; the shell has afterwards decayed leaving this nucleus which bears marks of the two processes from the hinge characteristic of the genus. Kellaways

Cornu Ammonis flat marked with frill transverse striae. Kellaways bridge & Calne.

Cornu Ammonis almost spherical frequently fine-ly filled with calcareous spar when the transverse section exhibiting the septa & siphuncules are very beautiful. Kellaways rock

Note. This seems to be the same species with that found though very rarely in the Cornbrash 35.

Strombus resembling Pespelicani small. Sommerford

Pholas. In a piece of decayed wood - the shell preserved by the substitution of calcareous spar; the cavity which it had formed in the wood filled with the grit. Sommerford

Mytilus. ≫ - fragments. Sommerford

Tellina? A very thin almost orbicular shell. the two valves frequently together but open. Sommerford

In the Kellaways grit of Christian Malford I have noticed impressions of a large studded Trigonia of a distinct species but have not been able to get either the shell or a cast.

Ostrea lobata. Very abundant.

Pecten. with distant striae resembling one of the last species 19.

Mucrolites.

Christian Malford

Greensand formⁿ

At Pewsey between the Village and the Canal, the G. sand is cut through to form a road where the cup alcyonites appear in a regular stratum, but lying horizontally and with the stems much broken. That the concretions containing these reliquia are found are appears from the paving of the footpath in the village which in many places exhibits the circular edge of one of the cups. Minute shells, milliolites &c. are interposed in the sand among the cup alcyonites. Mr Townsend collected a number in his garden, else the G. sand at Pewsey contains no petrifactions.

In general in this stratum the degree of solidity given to the reliquia by the infiltration of siliceous matter is very various, being sometimes so in Nº [illegible] barely sufficient to preserve the appearance of the originals; when the quantity of liquefied silex has been greater it has filled the pores and tubes of the alcyonite or sponge so as to present a fibrous structure which has very erroneously been taken for the fibres of the original in a state of petrefaction when as it is only the effect of a cast in the cavities which appear to have resembled those of the common officinal sponge. Where yet more has been infiltrated the structure is rendered obliterated or only faintly discernible by a variation of colour, and the whole is changed into a species of chert chalcedony or flint. ~~Of this~~ Perhaps all the flints of the sand stratum are a modification of the Chalk owe their origin to animal matter; however we must not attribute to the originals the forms of the flints at present in the conglomeration of the sand has frequently extended to a considerable extent from the nucleus. Sometimes these alcyonii flints are so pervaded with the green particles as to form a species of Prase. (Turn back)

Greensand Form.

At Halldown the G. Sand resembles in quality that of Black-down ~~but~~ containing similar corrections & fossils exceeding similar, but it rests upon the a conglomerate which forms so large a portion of Devon. Delue. Geol. Trans.
Some of the fossils appear to have been changed from Flint into a kind of Jasper as N.B. Mr. Townsend has a considerable number in this state some of them agglutinated as if by the action of partial fusion.

the spot at Longbat where the Echinites are found, is of very limited extent, being only a corner of a ploughed field whose surface being loose appears to have disclosed a stratum abounding with an infinite number of silicious petrifactions through the spot has been gone down by workmen for 20 years past, every successive workman finds a fresh supply & is able to collect hundreds in the course of a few hours. The greensand formation which extends from hence to Warminster abounding in corrections containing traces of organization - an abyssinite or spongy like stone of Devonshire N.B. but more effaced specimens are rare as the sand is indurated to a greater distance from the ~~re~~ liquid forming the ~~sand~~ nucleus. Many bear a considerable resemblance to the cancellated structure of bones. At Brockerton, the greensand rests on a stratum of clay, the village appears to have its name from ancient manufactories of earthenware or crockery.

Green Sand. Form.

Green Sand from Pewsey

Green Sand from Warminster

Whetstone from the Blackdown pits. The green sand formation here appears to rest upon the Rock marle or old red sandstone. The whetstones are concretions forming a stratum some miles in extent round the top of the hills of which see description in De Luc's Geol. Trav. Vol. They appear from their shape which is that of knots of trees to have their origin to animal matter, indeed there seems throughout the whole of this stratum that there is a tendency for silex to deposit when over animal matter has been. The siliceous petrifactions are formed by substitution in the manner described by Martin It not unfrequently happens that a shell is only partially filled with siliceous matter which then incrusts the cavity of the mould and forms like the deposit of a fluid in the lower part, generally with chalcedonic tuberosities. It is remarkable that such a substitution should prevent traces even of the original colouring of the shell; as in No. — noticed by Sowerby. Mus. Lesch.

The concretions of sandstone are formed by a particular lamination into whetstones for sey this. is a rough manner on the spot they are then carried home and worked into their proper shape by the women in a trough of water. The particles flying off here so prejudicial an effect upon the health that the work people generally die of phthisical complaints at an early period; as the workmen of the Saxon stone quarries near Dresden. Goetzis Schandau Merchants from Bristol buy up the whole produce of the pits at different prices according to length &c. excepted which are sold on the spot.

Green Sand Formation. (Parcel. marked Long Leat

1. Ostrea muricata. Towns. — Long leat (Pecten.)
   ″. — — Pewsey
   ″. — — — Warminster

2. Dianchora Sowerb. Long leat

3. Ostrea ? the lines of growth imbricated, 8 thin plates, with occasional pleats Long leat.

4. Pecten — every fifth rib more elevated. Long leat

+ — resembling the former not so nearly equal. striae almost equal every 7 or 8th somewhat larger. qu. an Pleurotomaeya? Long leat

5. Dianchora? or Pleurotoma — resrich but without the opening at the hinge. L. leat

+ 6. Pecten. about 36 equal striae sometimes with a small one interposed

+ 7. Plagiostoma perhaps Pecten very finely striated a shallow shell L leat.

8. Crenatula! Lam. An. Mus III. The fibrous bivalve with crenulated hinge. fragments of the hinge often found detatched L leat

9. Ostrea. crista testis ovate triangular. L leat

10. Plagiostoma — the shape of gigantea very small. L leat

11. P Pecten a fibrous bivalve qu. a Pinna? L leat

12. Anomia Terebratula caput serpentis. every variety of size & curvature - perhaps several distinct species L. Lias

13. Anomia Terebratula. Townsend. - L. Lias

14. Anomia Terebratula allied to the former but with the perforated beak extended straight out ~~the~~ double the length of the under shell. L. Lias

15. Anomia Terebratula plicatella? small deep waved, crenated at the margin L. Lias

16. Anomia Terebratula - larger. less abruptly waved. L. Lias

17. Chama gryphoides? certainly not the C. gryphoides of Linnæus. ♀. Ilfracombe. Warminster.

18. Ostrea? crista galli. ♀. with the foregoing.

+ 19. Ammonites. with a double row of tubercles. generally oval - imperfectly preserved. ♀. Lias.

20. Nautilus. - resembling the large one in the Lias compartments ♀. At L. Lias - at Pewsey. - the single ~~valve~~ resembles cup coralls but distinguishable by the central septum-culus. Fine specimens in Mr. Townsend's garden - too large for a cabinet, have one compartment.

21. Ammonites - single crenated joints ♀. at Longleat by the Canal beyond Deanery

22. Belemnites. small ♀. at Longleat

NB. The Turrilites Park. Org Rem. III. Pl. 1 Figure 3.
and Sowerby. Min. Conch.

Mr Mead has among his Longleat fossils the "Birdsbeak" or "Sepia tooth"
on Lias fossils No. I also found three of same Rev.d Mr. Richardson
the bottle Encrinus.

23. Turbo.? a cast very imperfect?
H. Longleat

24. Helix.? a cast
H. Longleat.

25. Helix ? wide opening Very small spire - a cast.
H. Longleat

26. Serpula round. irregularly but slightly bent.
H. Longleat

27. Serpula. - angular grooved edged cavity cylindrical
H. Longleat

28. Serpula minute contorted. aggregated (see 35*)
H. Longleat

29. Echinus. Ovate. - aperture below
H. Longleat

30. Echinus.
H. Longleat

31. Echinus
H Longleat

33. Echinus
H. Longleat

34. Echinus mamillatus 34* var. obductus Par. Hinton
H. Longleat

35*. Serpula cylindrical spiral.
H. Longleat

36. Madrepora Poopitall cylindrica.
H. Longleat

37. Coralina subu[illegible] Capt. in the form of a concavelaya.
H. Longleat

*. Note

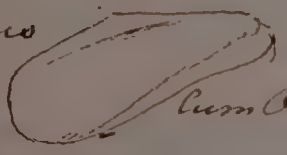
38. Alcyonium? Cm. irregularly tuberculated mass
the surface resembling an alcyonium or Spongia.
H. Longleat

39. Millepora? a subcylindrical knob the surface to-
vered with ~~holes~~ pores. H. Longleat

40. Corallina branched minute aggregated with 28
H. Longleat

41. Pecten. circular - 5/8 in Diam. -
H. Longleat

42.* Bivalve somewhat resembling a Trigonia.
Calcar.
H. Portland. stained with oxyd of Iron.

+ 44 Mytilus 
Cum Precedente in Similari substantia.

N.B. Microscopic shells from Pewsey... Qu. are not the recent microscopic Ammonites, Baculites &c. said to have been found on the shore at Rimini & ~~Ca~~ on the E. Coast of Britain, of reality fossil shells washed out of the green sand strata, at those places? (See Walker Testacea minuta rariora)

"tied together in Brown Paper." Venus Blackd.

Venus. plana Sowerb. 2 in long. 2 ½ broad without a ridge

Blackdown

Venus. angulata S. 3 in long 3 ½ broad

Blackdown

Venus. lineolata. S. 2 ½ in long 2 ½ broad with a ridge

Blackdown

Venus. Shining shell thin subcorner. 1 ¾ in long. 2 broad.

Blackdown

Venus. very flat with deep concentric striae resembling a recent british species 1 ½ long 1 ⅛ broad.

Blackd.

Venus. concentric striae or lines of growth visible 1 5/8 long. 1 5/8 broad

Blackd.

Venus. ? very flat, a deep line of growth smooth. 1 ⅛ long. 1 ½ broad

Venus. ? faintly striated, subtrigonal with a high ridge. 1 ⅛ long. 1 ⅛ broad.

26.30 Sp

Cucullaea. large. 1½ in by 2 3/8.
smooth. with lines of growth.
Nacre.

Cucullaea - large 1 1/2 in by 2 3/8.
smooth with lines of growth. Blackdown

Cucullaea. 1/2 by 2.
resembling the preceding but much narrower.
Blackdown

Cucullaea. glabra. Sowerby. 1 by 1 1/8. longitudinally striated, the al-
pl. 67. ternate striæ fainter, crossed by other
striæ bread thways. Black.

Cucullaea.* very broad, longitudinally
striated, carinated. the striæ near the side, very deep
those in the middle shallow. Black.

Cucullaea. resembling the former
but the beaks wider asunder
Black

Pectunculus. Somerby Min. Conch. Very abun-
-dant under the name of Cockles. Black

Nucula - the lines of teeth nearly forming
a right angle. Black.

 the lines of teeth forming a much-
more obtuse angle than in the former. Black

*This & the following resemble Arca Noae in many respects

Trigonia radiis. Parkins. Blackdown

Trigonia alaeformis Parkins. Blackdown

Trigonia affinis nobis. resembling alaeformis but more
muricoarse & with a little elongation. —
Blackdown.

Trigonia seminata. Parkins. varies much in size
Blackdown.

Wanting (Trigonia spinosa Parkins. — Blackdown)

Trigonia daedalea? Parkinson. Halldown.

Pinna? Resembles Sowerby in Conch: 166.
and is probably a species of the same Genus which
is very distinct by the hinge consisting of a series
of quadrangular alternate elevations & depressions.
Blackdown.

Chama. gryphoides? resembles that of Warminster but
is less, and otherwise Oxfordian, is very abundant-
mixed with the sand above the Stratum of white
stone.
Blackdown
the edges plaited; with the former
Blackdown

Cardium. Hillanum Sowerby. - 14.
Blackdown
pulchernimum. Townsend Mem. Vol. I.
Tab. - fragm.
Blackdown

Corbula?
a large shell but probably
many thin, appears to have gaped on one side &
perhaps was spinous, striated concen-
trically very regularly.
Blacked.

56.

Pecten quadricostata. Sowerby., an equal unequivalved shell, one valve flat, with two ears, longitudinally striated, every fourth stria larger.

b.

c.

Mya intermedia Sowerb. 7b.

Murex with long spines

Blackdown.

Scotellaria lamellosa Parkinson. Br. Rem. Vol. III. Tab.

Blackdown

Scotellaria. (resembling Strombus Pespelecani) Parkinson. Br. Rem. Vol. III. Tab. Blackdown

Auriculania. - Parkins. Org. Rem. Vol. III. Pl. Blackd.

Serpulania

Vermiculania - Parkins. Org. Rem. Vol. III. Pl.

Litiuus Parkins. Org. Rem. Vol. III. Pl.

Turbo.

Nerita.

The spiral flattened. the turns

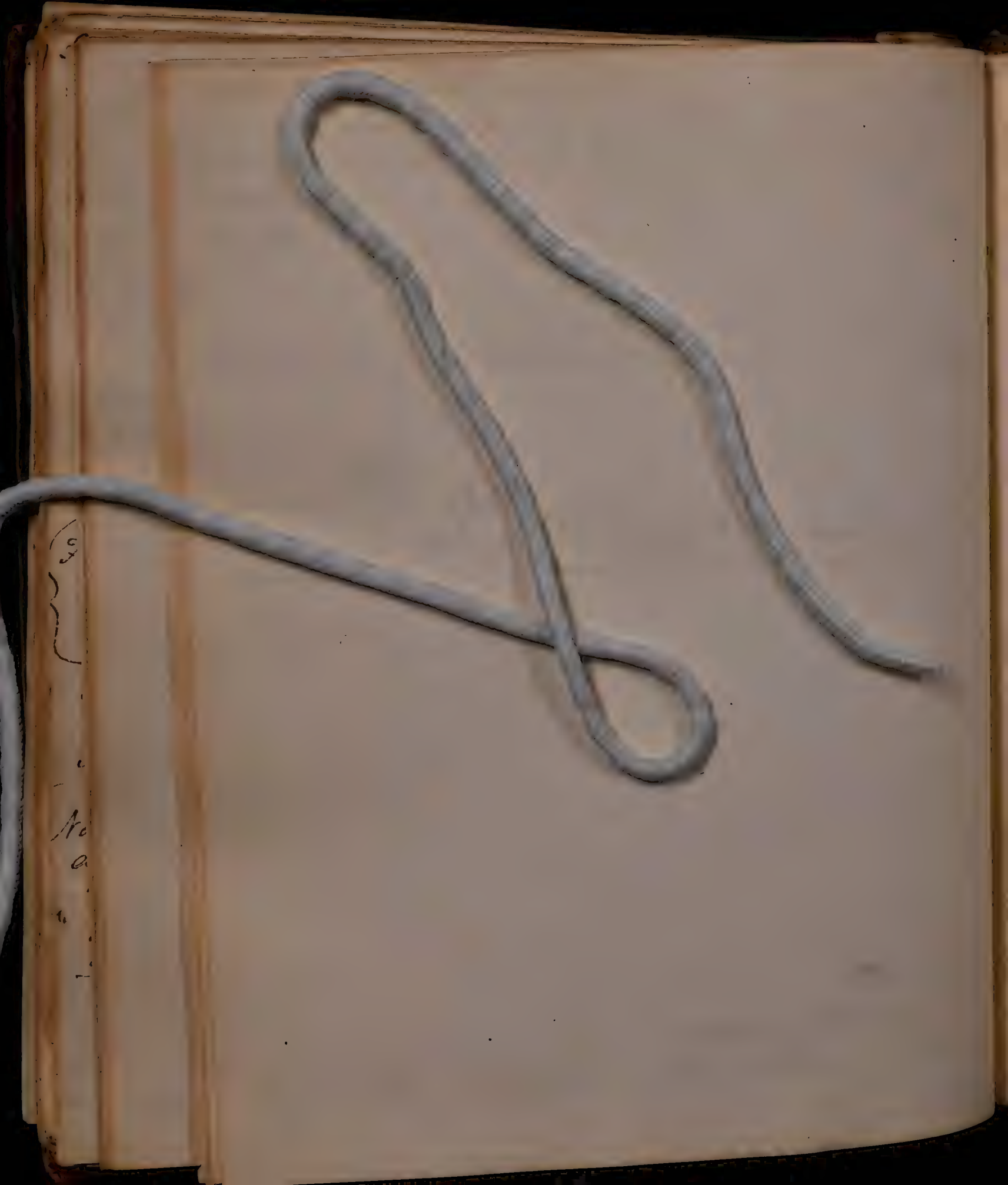
Ammonites.
transversely nibbed. Mr Short to possesses one I
think of this species with the last chamber & mouth
perfect.
Blackd

Echinus.
Blackd

V. Asteria. with 5 short rays. — ostmi Ignina Blackd

Aegoceras. pedunculated, resembling
has recorded by Mr Webster. Trans. Geol. Soc.
but with a much shorter pedunch. Black 3

(Insert below #
From S. Cabal. N.º on Yellow
Ag Breccia in Green Sand. Redbay N. Ireland.)



G.S.1. Cup Coral or Alcyonetti of Pewsey in its Bodmian Sandy Concretion

G.S. 2. – 7. Cups of Do. with Stem

G.S. 8. 9. Detached Cups

G.S. 10 – 14. Fragments of Stems

G.S. 15. Alcyonia flint Halldown *

G.S. 16 Do. Blackdown

G.S. 17 Scratched at Swindon

G.S. 18. } Casts of Trigonia from Swindon

G.S. 19. }

G.S. 20 Cast of Bivalve Do.

G.S. 21. Pulvis? place unknown (Ins. from S.C.) #

A specimen of the Hollow Bed full of Casts of shells from Portland. – & one of the freestone bed of Portland, known as Portland stone for building. The Series of strata constituting the Islands of Portland are thus seen below the Sands that rest on a thick bed of Clay ~~superincumbent~~ above the Superior Oolite. They are therefore probably altogether wanting in Wiltshire, where the Superior Oolite comes immediately from under the Green Sand or Quern Sand. – G.S. 17 from Swindon resembles the Portland hollow bed in some degree.

* The shingle forming the Race of Portland consists almost entirely of the alcyonic flint of the Green Sand, not of chalk-flint or real mountain Quartz as has been thought.

Malmy chalk. New chalk.

Ammonites. Park. Org. Rem. III.

This appears to be the most recent stratum producing the Ammonites - The London clay has several Species of Nautilus but no true Ammonite. near Pewsey.

[Serpulites. Park Org. Rem. III. Pl. X. fig 10 & 11, Sowerby Min. Conch. Pl. have not got.]

Soft Chalk.

8. Varieties of Sharks teeth — Plumstead
9–11. Asterias or Starfish (resembling those in Green[d] 2[o] —
12–13. Bottle Encrinus Parkinson Vol. II. pl. — Plumstead
15. Echinus galeatus — Plumstead
16. Echinus — Plumstead
17. Cast in the inside of D[o] in flint. — Wilts
18. Cast in flint — Bedford
19. Less variety of Echinus 16 — Plumstead
20. Cast of D[o] in Flint — Malboro
21. Cast of Ech. galeatus in Flint — Salisbury
22. Echinus ~~galeatus~~ pilus — Plumstead
23. D[o] with protuberance from supernas open & frequent in Echini! — Plumstead
24–26 Varieties of Echinus mamillatus — Plumstead
27. & Echinus filled with flint — Northfleet
28. D[o] – impression in flint — Plumstead
29. Cast of 22 in flint — Thames n[r] Greenwich
30–35 Spines of Echini — Plumstead
36. Single plate of Mamillated Echinus — Plum[d]
37–38. Spine of Echinus or Belemnite? — D[o]
39–41. Species of Plagiostoma Sowerb. — Plum[d]
42. Plagiostoma or Dianchora – adhes[g] to Flint — Plum[d]
43. undervalve — Nodes
D[o] single in Chalk
44–51. Anomiae (Terebratulae) — Plumstead
52 Ostrea — Plum[d]
53. Serpula — Plum[d]
54. Madrepora — Plum[d]
55 Madrepora Porpita? — Plum[d]

56. Spherical bodies supposed by Mr. G. Cumberland to be the ovaries of the Echinus - from Mr. Hoste. Salisbury

57. Chalk. Cultra Ireland - phosphorescent

From Tuln. Catal. Nos on yellow paper

43. Crab. on Chalk.

44. Rete of an Alcyonite. Wilts. Mr. Johnson & Bris-
tol have specimens shewing the connexion of this fossil with a fixed alcyonite.

47, 47. Hard Chalk with Belemnites C. Antrim Ireland
This Stratum lies immediately beneath the great Basaltic formation of N. Ireland.

52. Tabular flints. Dartford. *

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* I am extensive and instructive collection of Flint fossils in illustration of their origin from Spongiae and Alcyonia of different species has been formed by Mr. Hoste of Salisbury, chiefly from the Chalk beds in that neighbourhood.

Strata above the Chalk. Charlton

ab. C. 1. Plumstead Sand resting on Chalk at ~~Plumstead~~

2–4. Clay above the Plumstead Sand containing Cerithia, Cyclades, Natica &c

5–20. Specimens of Shells from Plumstead & Charlton

20*. from Charlton

21–26 Specimens from Highgate Tunnel containing Pentonculus – Turbo – Solen. –

27. Specimen of a considerable number of Shells from Hordwell Cliff numbered according to Brander's Fossilia Hantoniensia

28. Superb ~~Car~~ Strombus with numerous other minute Shells from Alicant (from Revd. J. Townsend.)

29. Recent Oolite formation at Portland in Cornwal

30 Sand from Same place

31 Shells shewing that they are not yet changed (must accomodate the manner in which the Human fossil Skeleton of Brit. Mus. is imbedded) See. Phil. Trans.

From Fulhm. Catal. Nos on Yellow.

25. Crabs from Sheppy Island

26. Wood perforated by Teredo do

27. Fruit? from Sheppy

28. Serpula do

? 50. Bituminous wood Magdeburgh

? 51. do

Killymurray Antrim Det.

Great Church Clay Oxfordshire

Clay.—

This Stratum to which Mr Townsend attributes a thickness occasionally exceeding 200 feet, what it must at the least have in Wiltshire, seems to contain subordinate beds very much varying in different places & of no great extent. One of the most extensive is perhaps that of bituminized wood which has been mistaken for a regular Stratum of coal & worked for as such near Malmesbury though without the most distant probability as to its being a real bed of that mineral. The Marlstone magna stone full of beautifully preserved specimens of Ammonite, mostly small, when cut & polished exposes an elegant marble & when first discovered was used & sold at a high price as such. Large Ammonites are also sometimes found in this Stratum as in most clay strata. The [illegible] of this Stratum seems to have furnished the vast quantities of Belemnites and Cobate cysts found in the Alluvia of the midland counties; & the fine specimen of Belemnite with the Siphunculus extending in the form of an Orthoceratite beyond the termination of the belemnite, & explaining the nature of that fossil & deposited in the British Museum is from this Stratum.

The lobate Oyster. Townsend's Moor. Cat.

(The quadrangular pentacrinus. Bedfordshire wanting)

Belemn[illegible]. Smallone with both terminations acute & lateral opening fr. Castlehill. Bedfordshire.

Rhombus Pes Pelicani? similar to that in the Kellaways grit in a septarium resembling them from Highgate and the Gravil marble.-

Belemnites large from near Trowbridge

Flat Cornua Ammonis finely striated across with small spines.

Marston Magna Cornu Ammonis. Mr Cumber-land possesses specimens in which the terminal edge is very evident. Sol Coll.

Trigonia clavellata. from the S. Coast. qu. from Isle of Wight?

From Fulk. Coll.

No. on Yellow paper

30. 31. Cornua Ammonis fr. Marston magna

8. Serpula? Oxfordshire.

Ab. Ch. Must not be supposed to signify that they have been more recently formed, than the chalk or that they lie on the chalk, but that their present locality has been given them by a Catastrophe subsequent to the formation of chalk.

X

The chalcedonic flints many of which exhibit evident traces of an alcyonic structure (Nos. – Ab. C. 37—54.) form a ~~stratum~~ bed some hundred yards in length & breadth in the neighbourhood of Surrey – they seem to have been deposited there as an alluvium and are interspersed with masses of a siliceous glomerate. I do not remember having seen flints in situ, they are very different from the green sand flints & equally so from the Chalk flints; among them the specimens containing tinged traces of alcyonia described by Parkinson Org. Rem. Vol. are most abundant. Similar flints also occur in the large deposits of alluvial gravel in Bedfordshire, but I have not found them in that of Blackheath, Woolwich &c. One specimen from Bedfordshire exhibited distinctly the angular & ~~acicular~~ sequed in Parkinson ascending in the cortical part of the recent alcyonite not in the dark purple stain but beyond its edge. – Probably more minute observation would shew that other traces of the original organization of these Zoophytes are preserved besides the mere

Alluvial. –

Jersey – resting on Greensand – probably formed in the Gr. Sand. – ~~[illegible]~~ (Insert X)

Ab. Ch. 37 – 44. Chalcedonic Flints white, Alcyonic structure is obliterated except on Outside. Jersey

– 45. – 53. Chalcedonic Flints originating from Madrepores, Spongia, Alcyonia &c. Jersey

54. Breccia found among the Alcyonic flints in great abundance. I have seen a similar Specimen from India in which the cementing matter was Agate. Devon

55. Chalcedonic blue flint – a concretion in the green sand of Haldown & Blackdown lined with Quartz Xtals. Devon.

Alluvial

Bedfordshire – resting chiefly on blue clay

A.156. Specimens of Gravel. N. Bedford

57 – 67. Gravel flints with traces of Coral &c. Bedf.

Woolwich – resting on Chalton Sand &c

A.C. 68 Specimens of principal Varieties of Gravel from Blackheath Woolwich &c

69. Flint from ~~the~~ Plumstead with cavity lined with Steatite

70 Pebble from Shooters hill. Differs materially from the Chalk flints.

71 – 77. Alcyonite flint – Hackney &c Gravel pits

78. Flint exhibiting curious meandering white lines on black ground – the edges of an Alcyonia Cup Woolwich

79. Alcyonia flint. The Thames N. Woolwich

80 – 81. Flint with Tracheaeform impression See Parkinson Vol. III. Highgate

82. Do. from the Thames N. Charlton

83. Ivory, from a Gravel Pit at Shoeburyness Batt.*

From Fulnes Catal. No. on Yellow paper

21 – 21. Petrified Wood from Lough Neagh – See Parkinson Org. Rem. Vol. I.

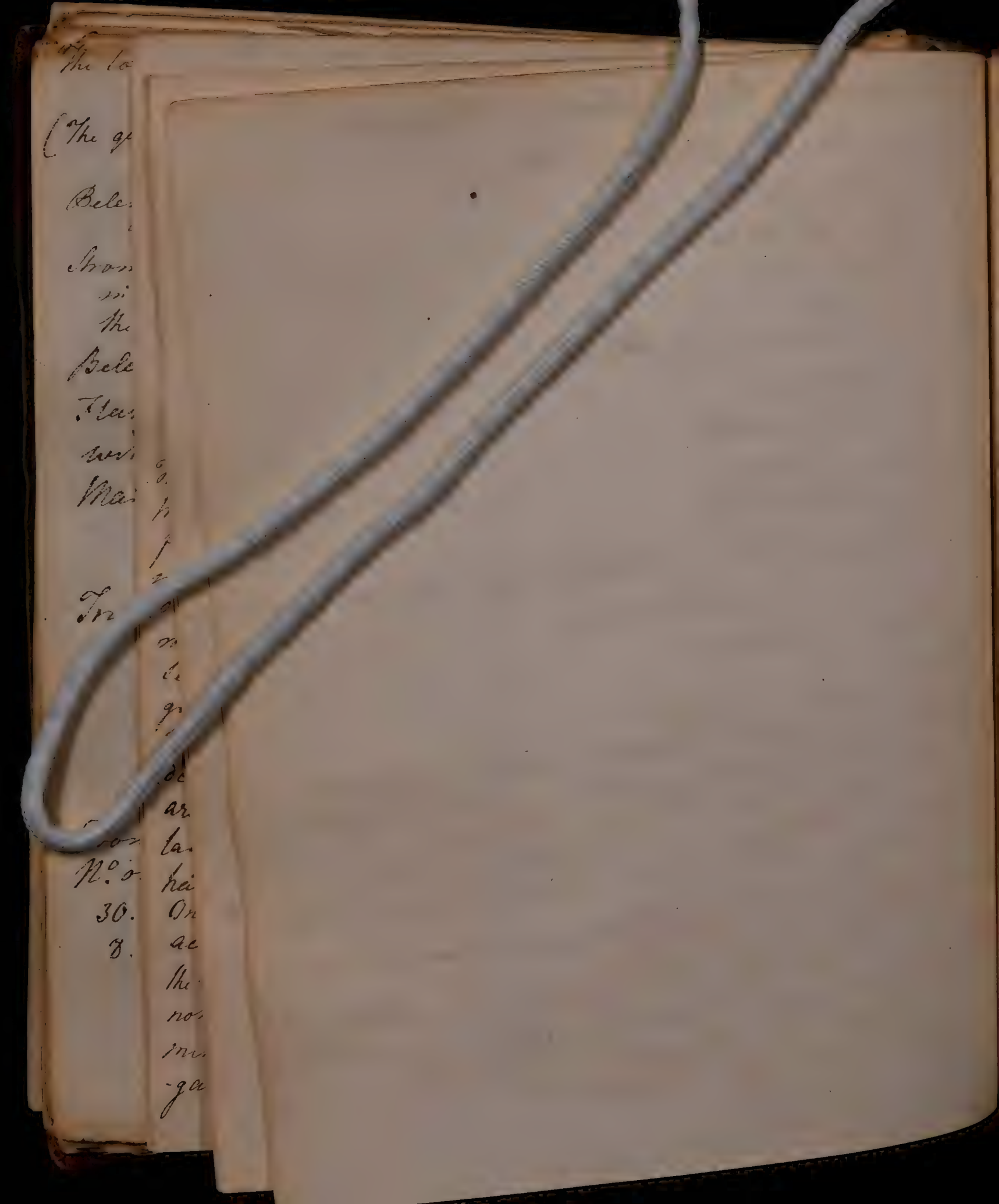
55. Alluvial pebbles from Lough Neagh.

* Note. Grinders of Elephants have been found in the Gravel bed near Lambridge, the Crescent fields & elsewhere about Bath, & the Tusks of Elephants in a low meadow near Salford.

Volcanic, Pseudo volcanic & Basaltic

5. from the Southern St. Nevis.
2. St. Vincent
3. Rio Juniero
3. Vesuvius
6. Sicily
6. picked up at Malta
1 St. Helena
3. Irish basalts
2. Devon. Trap.
1 Derby toadstone
5. Pseudo Volc. fr. Dudley by burning of Coal mine

From the Fulton Collection
Nos Red paper.
1. Green pitchstone Scotland
2.–6. Specimens of pitchstone containing Opal in one exhibiting the play of colours of the noble Opal from Sandy Brae Antrim. Ireland.
7. Toadstone Sodbury. – (See Redground 5 & 6.)
8–11. Toadstone Derbyshire – alternating with the "mountain limestone
12–15. Toadstone, decomposing from the basaltic area of the County of Antrim.
16. Cameron Basalt. Dunstanborough. Northumb.
17.–20. Fragments from Whindyke traversing the hard Chalk near Glenarm N. Ireland.
21..22. Basalt. Ratchaugh Northumb.
23 Do. Alnwick
24 Do. Derbyshire



25 Basalt Derbyshire.
26-29. Basalt & with petrifactions of Cornu Ammonis
the stony gritty fire with Steel, Gun stones in Basalt
& Variolæ Portrush. N. Ireland
30-31. Ashes from Vesuvius
32. Obsidian Iceland.
33. Ashes from the ruins of Pompeii
34. Volanic ashes with Leucites. Vesuvius
35. Transparent green Leucite. Colli Albesia
36. Augite v. Rome.
37. Prehnite in Whin or Basalt Scotland.
38. Capillary Zeolite in Basalt or Toadstone Gilgorm
Antrim
39. Zeolite. Iceland
40 Do. Giants causeway
41 Do. Lough Neagh. Ireland
42. Chalcedony from the Basalt of Giants causeway
43. Agates from the Ochil hills Scotland
they also imbedded in a Toadstone resembling
that of Sudbury, which also sometimes has Agate.
44. Ochre between the basaltic Strata of the Giants C.
45 Do compact ——— Do
46. Agates Scarborough
47. Globular Basalts from the Heinrichsberg
Neuenhut (See Leskes Travels in Saxony)
The Whins of N. Britain & Sienites form mineralogically the transition
from the Basalts to the Crystaline primitive rocks.

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T. 3. Fragment of a Geode. Dodecahedral Quartz K. W.

T. 4. Small dodecahedral Quartz Crystals from a large Geode.

T. 5. Half a Geode. Quartz Crystals. Agate K. W.

T. 6. Part of a Geode, externally Globularly angular containing Crystals of Quartz tinged red. K. W.

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8.

Fossils of the Soft Chalk. See Parkinson in Geol. Trans Vol. I.

Lituus. 2 Spec. Cuv. & Brogn.
Vermicula. 3. Sp. do Cuv. an. Parkinson. Vol. III. pl. VII. fig 11?
Belemnites.
A thick fibrous shell. probably a species of Crenatula. v. supra n°
Mya.
Ostrea. 3 Sp. Parkinson, one resembling O. edulis, another of the family of Cristae galli, the third small, crenulated on each side of the hinge
Pecten. two or 3 small species Park. inc. besides the large species which belongs to Sowerby's genus Plagiostoma spinosa v. supra. n°.
Gnomia craniolaris; Crania personata Lam. Cuv. not known in England
Terebratula. sulcata & two other species, one ribbed.
Spirorbis. v. supra. n°
Anarchita (Echinus ovatus) v. supra n°.
Porpita
Corals. Org. Rem. Vol. II. Pl. XIII. fig 70–79. v. supra. n°
Millepora. probably part of the Organization belonging to some very different animal of the class Vermes.
Sharks teeth v. supra n°
Rugous palates, scales & vertebrae of fishes
Stellae marinae v. supra n°.
Annular bivalve, uncommonly thin. Cuv. an. n° Parkinson.
Abivalve nearly circular, the margin turning upwards so as to give it a patella or dish form, with numerous long processes passing from the margin to the external surface & fixing it to other bodies. v. supra n°. Parkinson

A small putten with sharp angulated ribs not exceeding a quarter of an inch in length. Parkinson.

A bivalve, not an eighth of an inch in length, finely striated longitudinally, bearing a bright polish, & seemingly possessing its original light brown colour. Parkinson

Plate of the Tortoise echinite (encrinite) Org. Rem. II. Tab. Parkinson

o. supra N°.

Echinus Conula.
Cassis
Spatangus. Parkinson

(Insert 11th Leah)

Coral Rag

The Coral Rag in some places as at Goat and Wilts lies immediately upon the Great clay bed - in other places it is separated by the Wickhill Siliceous grit and perhaps some other strata of minor importance. It consists of a bed of strong clay holding up the waters of the superior springs in which are thickly imbedded numerous Corals or casts of Corals of fine pure Carbonate of lime, affording as at Westbrook excellent lime when burnt. Among the Clay ~~are~~ ~~many~~ the Spines of the encrinital echinus are abundant & casts of pectens, turbos &c. accompany the casts of Corals; the petrified Corals of Steeple Ashton are among the most beautiful of the reliquia of the Flötz formation, as their the substance of the Coral ~~being~~ being changed into carbonate of lime. The lower bed of the Coral Rag consist of a perfect pisolite sometimes so loosely aggregated as to separate into loose nodules from the size of mustard seed to that of peas, at other times so firmly agglutinated as to afford stone for mending the roads for which, in general this stone is an excellent & much sought ma-

A small p
a quarte
Alluviales,
longitud
possessi
Plate of th

Echinus

terial. Though more constant than the
Wicklow sand, it is probably frequently
wanting or only presents a bed of clay.
At Gortaine &c in Wales it is full 40 feet
thick, & in pursuing its course south it
becomes still more compact almost resem-
-bling the Mountain lime.

Coral Rag. (Insert 1 lf. foap ✓)

C.R. 1. Mytilus costatus. — Westbrook
2. Echinus mamillatus Queenborough
3. Spines of do. — abundant at Queenborough
4. Pholas. Grantham
5. Mytilus? do.
6. do. do.
7. Nidus of Mytilus & Pholas Grantham
8. Spines of dist. Echini Queenborough
9. Spine of an Echinus Queenborough.
10. Turbo or Melania (See Townby. Min. Con.
11. Impression of Pecten. Grantham
12. Serpula. — Grantham
13. Rhadinopora — Queenborough
14. Plagiostoma — Steeple Ashton
15. do. large. — Grantham. —
16 Pisolite Westbrook
17. Casts of Ostrea fossa? Grantham
18 do. of Chama Westbrook
19. Coral Rag limestone Stone Grantham
20. Pecten (II.) Westbrook
21. Plagiostoma Westbrook

From Fulm. Catal.
Nos on Yellow paper
1 – 7. Various Corals from Temple Ashton

Mountain limestone from Fulnec Catalogue
Nos in blue paper

1. Madrepora basaltiformis. (Lithostrotion Lhwyd) Ingleton.
2 do. Horton at foot of Penniegent
3. Large Madrepore. Malham.
3. Small branching Madrepore or Tubipore. Clapham Yorksh.
4. do. Ingleboro hill.
5. Fusiform Madrepore foot of Ingleboro
6. do. Transverse fracture do.
7. –
8. Parallel shoots of Madrepore do. –
9. Millepora Limekilns near Ingleton.
10. Boulder tubipore. Ingleton.
11. Small Madrepore; foot of Ingleboro
12. Large boulder Madrepore; bed of river, Airmar Calverly bridge probably from Skipton.
13. Aggregated madrepore St. Vincents rock.
14. Branching do. do.
15. do. do. do.
15.* Madrepore in black limestone Sodboro. Glocest.
16. Fasciculated Madrepore (Lapis syringoides) St. Vincents rocks.
17. do. do.
18. do. diverging do. –
19. Fragment of large disc of Madrepore studded with small stellae. St. Vincents r.
20. Fragment of disc with stellae with curved radii
21. Minute tubipore do.
22. do. do.
do.

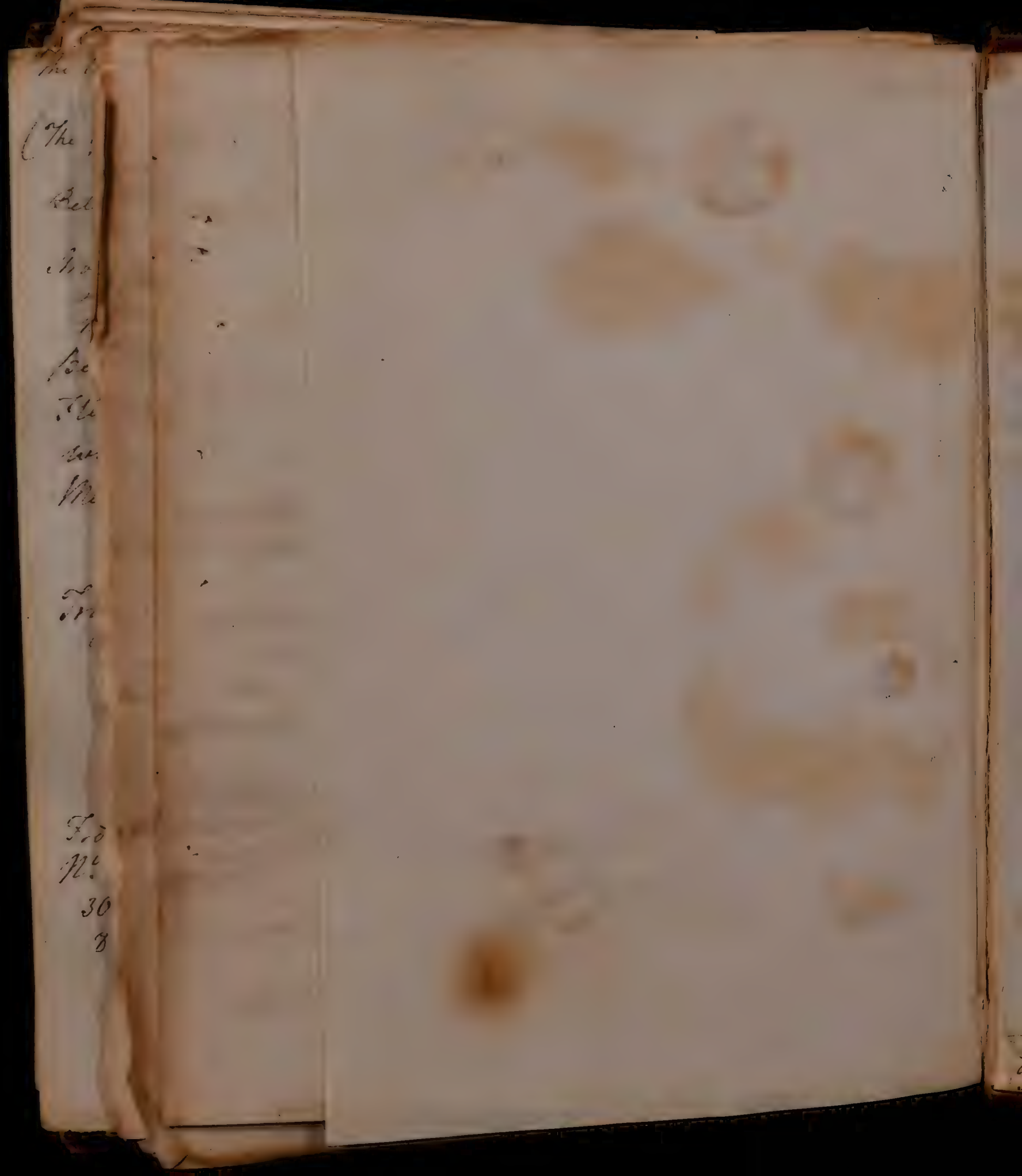
23. Branching Madrepore. St. Vincents Rocks
24. Large stemmed branching Madrepore. Do
25. Do transverse section. Do
26. Madrepora flosformis Martin. Do.
27. Do Do
28. Do. Do
29. Fusiform Madrepore (if a madrepore) polished Do
30. Do. smaller. polished Do
30* Do. large imbedded in the matrix Do
31. Do. horizontally compressed. Do
32. Do Do
33. Do. longitudinally extended Do
34. Do conical. Do
35. Various varieties of fusiform madrepores Downhampsey.
36. Tubipore? polished. St. Vincents.
37. Madrepore in Chert. Stoney Middleton. Derb
38. Do Bakewell Derby sh
39. Do Castleton Peak of Derby.
40. Madrepore in Chert imbedded in limestone
41-42. Fusiform madrepores Bakewell.
43. Branching madrepore Durham.
43* Fossilized madrepore Alnmouth. Northu
44. Large Madrepore with polygonal cellules resembling M. flosformis. Judd
49. Part of the disc of a similar one Shropshire.
50. Small aggregate madrepore Dudley
51. Minute branching corals Dudley

— 2 smalls. Penpole nr. Bristol

52. Entomolithus paradoxus extended and folded — — Dudley.
53. 54. Fragments of Ent. paradoxus with shells & coral &c. Do.
55. Shells, corals &c. Dudley
56. Entrochi in chert Stoney Middleton this specimen exhibits a mould formed on the outside & a cast in the inside of the Stem. it is the variety commonly called Screwstone.
57 Do. Do. in Chert. Matlock.
58. Do. in limestone with Anomia producta Mart. — Castleton
~~59~~ 60 Do. in grey limestone. Derbyshire marble.
~~59~~ 61. Do. Ingleboro.
62. Do. detatched parts of the Column St Vincents
63. Do. parts of column. Calver Derbyshire
64. Do. Do. branching & various Do.
65* large smooth specimens of Entrochi Do.
65. Columns of Entrochi with alternate large & small joints Do.
66. Entrochi Saxony.
66* Mamilla resembling part of an Echinus Near Weathercoat cave.
67. Anomia gigantea. Castleton.
68.–70 Anomia producta var. Ingleboro.
71. Do flat zoned var. Do
72. Do. flat finely striated. Do
73 Anomia productas from beds of limestone alternating with Coal. Heifer lane Alnwick
74. Anomia producta Alnwick moor
75. Do. Castleton
76 Anomia producta? flat with deflected edge & straight hinge. Dudley

77. Anomia producta? small. Penpole Pt. Orrest
78. Anomia producta St Pinnock rocks
79. Anomia producta, Pugnus ? Notts. Castleton
80. Anomia laterally elongated triangular. Derbyshire
81. – 86. Anomiae different species. Castleton
87. Nautilus spherical with posterior spine Castleton
88. Ostrea. Malham N. the Cove.
89. Delphinula —— Derbyshire.
90. – 96. Anomiae different species from Dudley.
97. Cast of a Bivalve? Derbyshire
98. Large bivalve. qu. interior cast of An. producta. Gorm
99. Entomolithus paradoxus? Dudley
100. Tubipora St Vincents rocks
101 – 102. Limestone alternating with Basalt Ratcheugh Northumb.
103. Entrochal Marble. Derbyshire
104. Limestone with spherical cavities filled by radiating calcareous spar. Durham.
105. Black Marble. From the Shale stratum above the Derbyshire mountain lime formatt. Monsaldale P.
106. – 109 Magnesian Limestone Bolsover hill
The position of the magnesian limestone seems doubtful probably an upper bed of the M. lime. See Farey's Derbyshire
Mr Babbage supposes it to occupy the place of the Lias. Elem. of Geol.
111. Magnesian limestone. Yorkshire 2d Ed. p. 353
112. Anomia producta Balboro. Derbyshire
113. Entrochal limestone Sunderland. Qu. Geological position?
114. Calcareous spar tinged green. Near Gretebridge
115. Calcareous spar resembling Iceland spar.
No. on Yellow paper
45. Trochocratite. Germ.
56. 57. Stalactites. Gordale & Gordas Cave Yorkshire

Mutton
Connection with the



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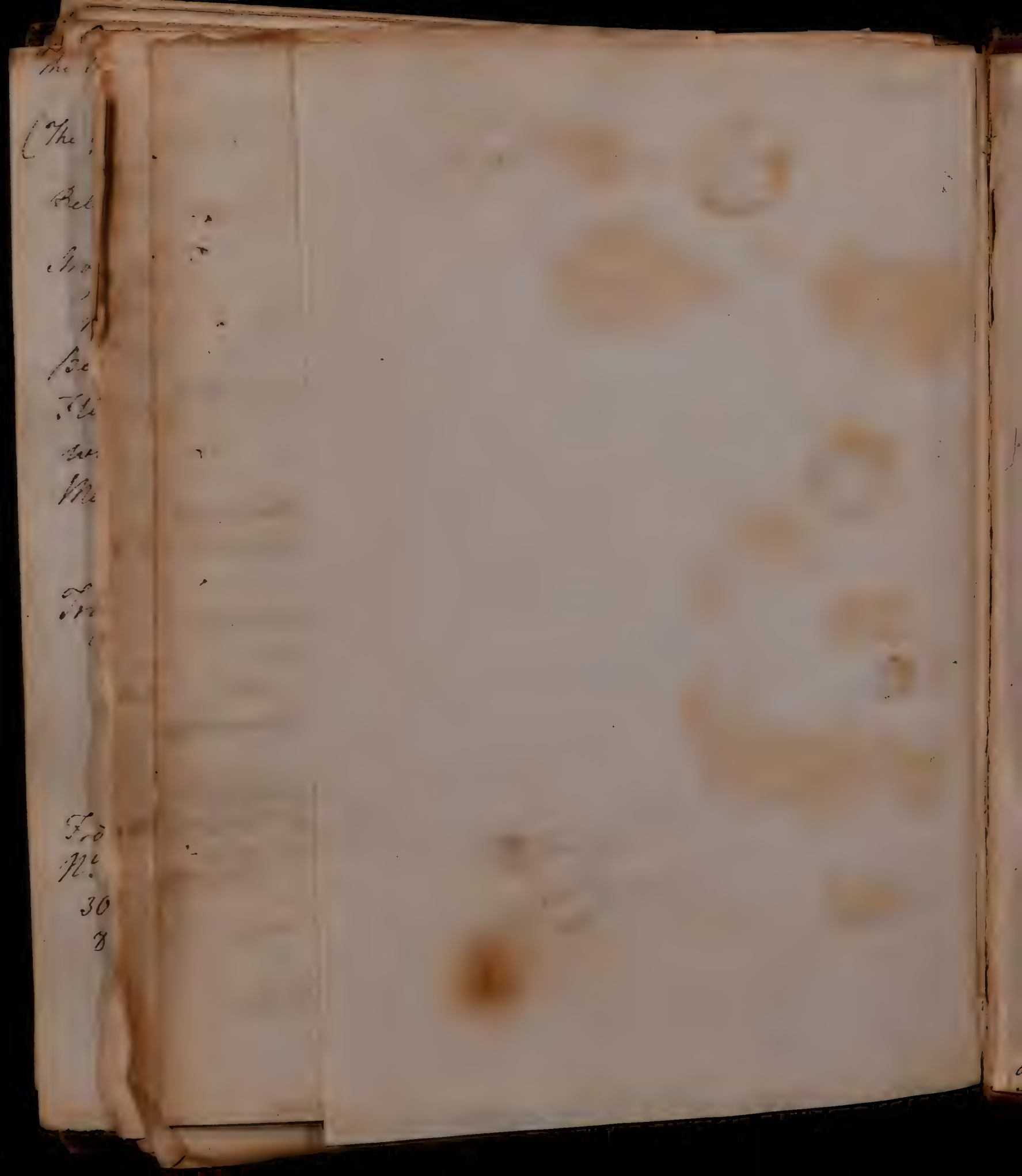
occurs among sand in the crevices of the M. L at its junction with the sandstone.



The Mountain Limestone or metalliferous limestone is supposed by some of our English Geologists to be the lowest Flötz lime of Werner by others to be the highest Transition lime. It is certainly below the Lias; in Somersetshire and the midland counties of England it is below the Coal formations; but contains in Derbyshire three subordinate beds of toadstone or basalt* & is divided in the N. of England into a great number of beds by subordinate strata of shale, sandstone, coal &c.** The Somersetshire Mountain limestone of which St Vincents Rock, & Bredon Cliffs afford such fine sections, also contains thin subordinate beds of sandstone, clay, coal &c. The grain is generally somewhat crystalline probably from imbedded petrifactions consisting of calcareous spar, but sometimes it assumes an oolitic structure, the chemical constituents carbonate of lime with accidentitious mixtures of the other earths & metals; the black varieties are strongly impregnated with petroleum & therefore require a less quantity of coal to burn them to lime. The petroleum may frequently be separated by

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* For an extensive account of these beds consult Farey's Derbyshire

** See Foster's section of the Strata.

[illegible] economic products Clifton
occurs among sand in the crevices of the M. L at its junction with the
Sandstone.

dissolving the stone in a weak acid when it flaeth on the tops. Qu. Does this bituminous arise from the Organic matter with which the rock abounds? The Magnesian limestone of Bolsover hill seems to be a subordinate stratum above the Mountain limestone but only a partial formation. The limestone of Plymouth bears much resemblance to the M. limestone in external characters but in vicinity to the schists & its passing over into a schistose form in itself lead to a suspicion that it is a lower formation. The limestone formation investing the granitic elevation of Dartmoor in Devon, consisting of beds of carbonate of lime alternating with schistose greenstone, answers to the transition lime of Werner & contains few petrifactions & these often much contorted. It is also found in one or two places on the coast of Cornwall.

The proper mountain limestone abounds in petrifactions, of which the various species of Enomia productus are the most characteristic and abundant in every part of the kingdom. The aggregate corals are plentiful in the upper beds of the Somersetshire formation & the Encrinites &c. so common broken into innumerable fragments appear to constitute the mass of the stone in most parts

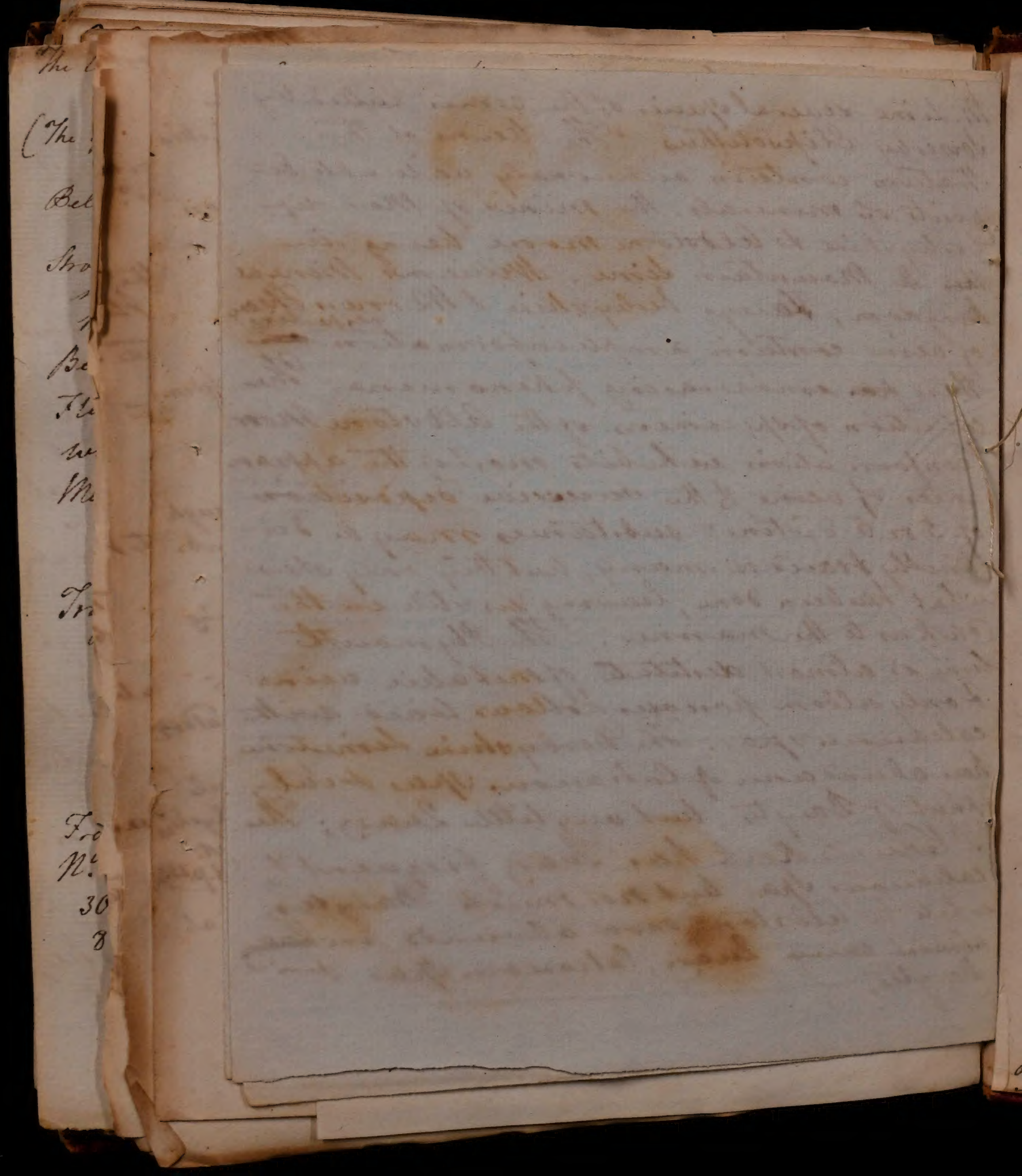
parts of the Somersetshire, Derbyshire & Yorkshire
formations. A number of the common & rare
fossils are figured by Martin from the Collec-
tion of White Watson of Bakewell in his Petri-
-facta Derbiensia, & Parkinsons work on
Organic remains, containing some. W.C.
Cumberlands Collection in Bristol contains the
most select assemblage I have seen, comprising
the varieties of discaform corals, the ramose
corals, the fusiform corals, the elongated coral
with a single madreporean star; various
singular & paradoxical varieties of Enomia,
the stems of Encrini, round & oval, among the last
many joints in which the transverse diameters
of the articulating faces are not parallel but
cross at various lines at right angles, thus
allowing a motion in every direction through
the joint only permits a flexion from one
side to the other; various sections of the head of
an Encrinus, probably the ~~lost~~ rare Encrinite
which has been found in a ~~lot~~ very perfect
state at ~~at~~ St Vincents Rocks (now in Mr Millers'
Collection in Bristol), at Shipperham on Mendip,
and in the M. limestone near Skipton (now
in the British Museum). But the most remar-
-kable of Mr Cumberlands fossils are the re-
-mains of insects & fishes, such as portions
of the Ent. paradoxus of a different species
!

50 Spinous Enomia Productus Clifton
occurs among sand in the crevices of the M. L. at its junction with the
Sandstone.

from that of Dudley from Castleton & Palates of various formations from the black rock bed of St. Vincents rock. He has also the beak of a Fish resembling the ribbed proboscis found in the Lias at Bath from the same rock & several fossils which must probably be referred to the genera Astacus or Cancer. These fossils shew the ~~impossibility~~ impropriety of attempting & impossibility of discriminating with certainty between strata by their fossils though they furnish most important assisting hints. The remains of fishes ~~exist~~ are common to the M. Lime & to the Lias — Remains of Astacites & palates to the M. Lime, the Lias & the Cornbrash — Remains of the genus Delphinula — some species of Ammonites, & Orthocera to the M. lime, the Dublin Lime formation, and the Derbyshire shale limestone; the Orthocera to the M. Lime and a subordinate bed of the Yorkshire Coal formation. On the other hand the Dudley Lime formation, independently of its structure in thin layers separated by beds of clay, contains almost exclusively a particular species of Entomolithus; the Shropshire M. lime which approaches that of Dudley, has the Chain Coral & a particular species of Encrinus; and the Dublin Hock

M. Lime several species of the genus called by Sowerby Elipsolithus. The veins of this Stratum contain occasionally valuable deposits of minerals, the mines of Mendip Derbyshire & Aldstone moore being in the Mountain lime. Williams Mineral kingdom, Farey's Derbyshire & Werners Theory of veins contain ample information respecting these embarrasing phenomena. The collection of specimens of the Aldstone Moor Formation exhibits most of the appearances of veins & the successive deposition of 5 or 6 distinct substances may be distinctly traced in many, but they only shew what has been done, leaving us still in the dark as to the manner. The Plymouth lime is almost destitute of metallic veins & only seldom possesses hollows lined with calcareous spar. The Derbyshire Limestone has abundance of Calcareous Spar & sulphat of Barytes, but very little Quartz; The St Vincents Rock has Quartz frequently calcareous Spar but not much Barytes; while the Aldston moor abounds in almost every Quartz, Calcareous Spar & Barytes.

Spinous Anomia Productus occurs among sand in the crevices of the M. L at its junction with the Sandstone. Clifton



Mountain Limestone. (Insert 3 leaves foap)

M.L.1. Transition Limestone. N of Devon.
(Not M. Limest

ML. 1 – 4* Mount. Limest? Plymouth.

5 – 8. d°. Derbyst

9. 10. d°. Chepstow & Tinton

11 – 12. Anomia prosoetus S. Wales.

13 – Mountain Limestone Coalpit Bath Easton

15 – 19. Shropshire M. Limest. Forms

20. Delphinula Dudley

21. Cardium Somerby. Dublin
Mr Cumberland possesses a smaller species from Castleton.

22. Dudley.

23 Delphinula Dublin.

24 – 27. Anomiae. d°

28. Orthoceras d° See Martin. Derb. Petrif.
Seems to connect
The petrified Crocodile of Whitehurst a ~~mountain~~
the Stratum with the Ashford Marble of
Derbyshire which belongs to the Limestone
Shale, above the M.L. (See Fulm. Catal. 105.)

29. 36. St. Vincents Rock & Mendip

37. St. Vincts Rock

38. – 43. Fossils f. Dublin

44 – 48. Specimens of St. V. Rock

49. Leigh Wood. Bristol

50 Spinous Anomia Productus Clifton
occurs among sand in the crevices of the M.L at its junction with the
Sandstone.